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Some Observations on Mouth Breathing.

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(Illustrations from original charts prepared by the author.)

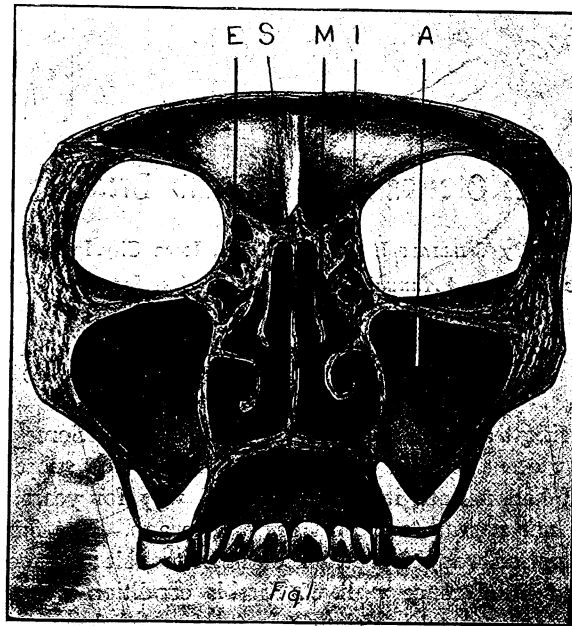
Mr. President and Members of the Association: Some two or three years ago my attention was seriously directed to the subject of mouth breathing. I had noticed it in a superficial way for years, but its full meaning did not appear to me till some time ago. The first thing that struck my attention was the prevalence of this trouble; the second was the ignorance and indifference with which this condition was viewed; and last, the far reaching and injurious effects of mouth breathing impressed me.

But little has been written or said that has been heeded about mouth breathing, though more than half the children of the country are afflicted with some of the troubles that cause it; physicians are seemingly careless or indifferent concerning it and its effects; parents are absolutely ignorant of its meaning to their children, and dentists, I am sorry to say, are as ignorant as parents. All this is lamentable, because mouth breathing is largely a trouble of childhood, when the health of the oncoming race should be fostered and protected by those older and wiser, who know (or should know) that health is the greatest blessing that can be given to posterity.



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It is popularly supposed by many, by the profession as well as the laity, that mouth breathing is a habit, something to be done or not just as the child pleases, just as making faces or raising a fuss when put to bed is a thing to be done at will. Mouth breathing is nothing of the kind; it is an expression of an abnormal condition, and sometimes of deep seated disease. The abnormal conditions which cause mouth breathing are seldom painful, and largely for this reason are they overlooked. The child knows nothing of their presence, and because the child does not complain, the parent makes no inquiries or examinations.



Cross section adult skull.

E, ethmoid cells; S, septum; M, middle turbinate; I, inferior turbinate; A, antrum.

Though mouth breathing is a trouble of childhood, its effects are to a greater or lesser extent permanent through life, as it affects the proper development of the child in many ways, many of which conditions remain fixed after the period of growth is past. For instance, those who are habitual mouth breathers from childhood to youth are flat chested and have insufficient lung capacity, which condition persists through life. Mouth breathing affects the development of the entire nasal tract, the bones of the face, the nose itself; it affects speech and hearing, and what all dentists should know, it affects the shape of the dental arch, and usually the

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position of the lower jaw as well, causing great inharmony of the facial lines. It is even believed that it affects the intelligence of growing children, as many times children thus afflicted appear dull and listless in school; but it is also found that in such cases the hearing is considerably affected, and the child being thus deprived of this sense lacks the knack of picking up things as quickly as the others, which may partially account for the seeming dullness. Mouth breathing certainly has an effect upon



Vertical section of mouth and nasal passages.

FS, frontal sinus; SS, sphenoidal sinus; ET, eustachian tube; PT, pharyngeal tonsil; SP, soft palate; FT, faucial tonsil; LT, lingual tonsil.

the general education and the general health, as well as creating a predisposition to nasal, aural, bronchial and lung troubles.

Anatomy of Nasal Tract.

Before beginning any further consideration of the subject, the anatomy of the nasal tract should be briefly rehearsed, and its chief physiological functions mentioned. The accompanying charts are not offered as absolutely correct anatomically, but only as diagrammatic in character,



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although they are made from careful anatomical study, and are not seriously incorrect.

Fig. 1 is a cross section of part of an adult skull, the separation being between the first and the second molar teeth, the section cut off being viewed from behind. The nasal opening is bounded by a floor (which is the ceiling of the dentist's apartment) by two walls, and a roof, and is divided in two by the nasal septum. The nasal tract is traversed lengthwise by the turbinated bones, which partially divide the opening into different chambers, known as the superior, middle, and inferior meatus, respectively. Of these, the inferior meatus or channel is much the largest, and through this most of the air passes in normal breathing. The outer walls of the nasal opening form the inner walls of the antra, which open into the nasal tract (not shown in the chart). The ethmoid cells (imperfectly shown in the chart) also connect with the nasal opening. The frontal and sphenoidal sinuses, shown in Fig. 2, also connect with it, where is also seen the opening of the Eustachian tube, through which the middle ear is connected, this in turn communicating with the mastoid cells of the temporal bone. It is thus seen how diseases of the nasal tract may involve other tissues seemingly remote.

Fig. 2 shows the division of naso-pharynx and oro-pharynx, the soft palate being the dividing line. The naso-pharynx is subdivided into anterior, middle, and posterior nares, the last being that part between the posterior portion of the turbinated and the end of the soft palate. The tonsils are here shown, and are of particular interest in this connection, as hypertrophy of the tonsil (particularly of the pharyngeal) is the most prolific cause of mouth breathing. The tonsils are ordinarily supposed to be two in number, whereas there are four, and sometimes six. These are: the faucial tonsils—the ones ordinarily seen—located on either side of the opening to the pharynx; the lingual tonsil, located at the base of the tongue; and most important to us, the pharyngeal tonsil, located on the posterior wall of the pharynx, behind and just above the soft palate. This tonsil is also called Luschka's tonsil, Luschka's gland, the third tonsil, etc., and is entirely out of sight by ordinary observation. It extends on either side to near the opening of the Eustachian tube, and a small extension of the tonsil sometimes nearly surrounds this opening, which extension is called the tubal tonsil.

The pharyngeal tonsil, while a distinct histological structure, is a tissue of childhood and early youth; it normally atrophies and disappears by about the fifteenth to sixteenth year, unless it becomes diseased, when parts of it may persist much longer. The physiological reason for this structure and its disappearance is not explained.

The mucous membrane lining the nasal tract is also of interest in con-

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nection with our subject. This membrane varies widely in character in the different localities to which it extends. In the various sinuses which it lines, it consists of a very thin layer, and is not underlaid with any appreciable submucous tissue. Over the turbinated bones, the submucous layer is quite thick, and is richly supplied with blood vessels, which vessels become engorged during inflammatory conditions, adding appreciably to the thickness of the membrane, and as the bony walls are unyielding, the thickened membrane fills up the space and restricts the passage of air. This is experienced in an ordinary co'd, when normal breathing becomes difficult on account of this thickening. There are various glandular elements in the membrane and submucous tissues, which are most numerous in the nasal tract proper, and which add to the stoppage of the tract when diseased.

The physiological function of the nasal tract in normal breathing is of more importance than it would seem at first thought. We find first, that by passing through the nasal passages the temperature of the inspired air is raised to nearly blood heat before it enters the delicate tissues of the bronchii and lungs; second, that an appreciable quantity of moisture is added from contact with the mucous surfaces; and third, considerable quantities of dust and bacteria are separated by entanglement with the nasal mucus. Most of these features are lacking when the air is drawn into the lungs through the mouth instead of through the nose as Nature intended, and this changed condition has a direct effect upon the development of the lungs and chest. The continued inspiration of unwarmed and unmoistened air most unfavorably affects the delicate tissues of the lungs, and the tendency is to breathe much less air than normal. Instinctively the tissues shrink from contact with unprepared air, and it is well established that lack of full breathing means lack of development of the lungs and chest. Children in whom mouth breathing is firmly established are invariably flat chested, and of insufficient lung capacity; and when the growing period has once passed, no amount of gymnasium work or other practice will more than partially restore it, and the condition remains permanent through life. The general health is affected in a way from this lack of breathing fully, as there is lack of oxygenation of all the tissues of the body; and the pathological conditions that arise or are favored by imperfect oxygenation would form a chapter in themselves.

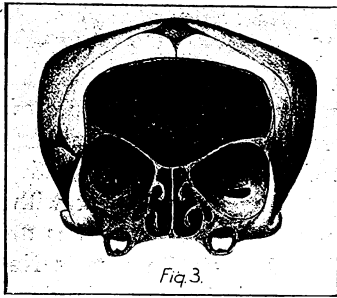
Besides affecting development in general as noted, mouth breathing most seriously affects the development of the nasal tract itself, and all its associated parts. From failure of passage of air through it, the tissues of the nasal tract are not required to perform their natural functions, and the normal stimulus to growth and development is lacking. The function of warming and moistening the inspired air naturally requires a vigorous



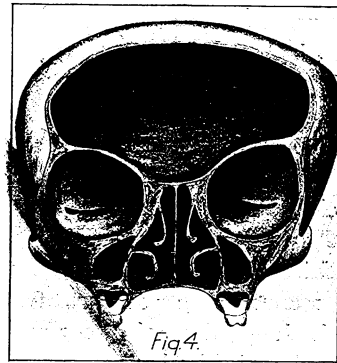
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and healthful circulation of the blood, the nervous elements are kept acting and reacting, the required stimulus toward growth is supplied, and the healthful and normal development of all the tissues, including the bones of the face and their contained sinuses, is a matter of course. It must be remembered that all the bones of the face are closely connected, and that growth of one part stimulates development of all the others.

We will now briefly consider the normal development of the nasal tract and its associated parts. Fig. 3 shows a cross section through the face at birth, just in front of the temporary second molar. It is seen that the nasal opening is not large; the walls are extremely thin, little more



Cross section, at birth.



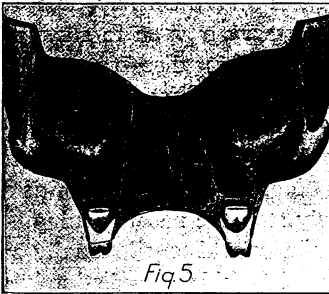
Normal development, three years.

than membranous—especially true of the septum. There is a very small antrum, large enough to contain a medium sized shot. The roof of the mouth is quite flat; no teeth being erupted, there is no alveolar process; in fact only parts of the teeth are yet calcified, and every part is necessarily very immature. There is no glenoid cavity whatever, nor trace of eminentia articularis. The auditory canal opens to the external surface, and in a skull of this age the bones of the ear are exposed in the opening. As a matter of interest it may be added that the sense of hearing is almost entirely wanting at birth.

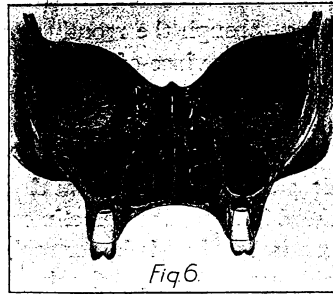
Fig. 4 shows the development attained at three years. The nasal opening has increased in comparison to the size of the skull, and the antra are larger, though still small. The roof of the mouth is more dome shaped, due to development of both maxillary bone and alveolar process; the alveolar process to hold the teeth now erupted, and the maxillary bone to contain the developing germs of the permanent teeth. The auditory canal is somewhat developed, but still very short. As yet there is no glenoid cavity, nor eminentia articularis.

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Fig. 5 represents the development at eight years. The nasal opening has increased considerably in size, but the antra are but little larger than at three years. This is due to the fact that the maxillary bones are almost entirely occupied by the crowns of the permanent teeth. The maxillæ have undergone considerable development to contain all these teeth, and the alveolar process surrounding the temporary teeth has increased in proportion as these teeth have attained full development and have been put to hard use. The dome of the mouth has apparently increased in height, but in reality the sides of the dome have extended downwards, thus increasing its size. At this age a slight deviation of the septum usually occurs, ordinarily to the left side. The glenoid cavity begins to be defined, but as yet is very shallow, and allows the greatest freedom of motion. The eminentia articularis begins to appear as a slight ridge.



Normal development, eight years.



Normal development, thirteen years

Fig. 6 shows the state of development at thirteen years. The nasal opening has enlarged some over the last figure, and the antrum has enlarged decidedly. This is because the permanent teeth have now erupted, giving Nature a chance to absorb the interior of the maxillæ, which bones have also enlarged with the general growth. The alveolar process has increased to accommodate the permanent teeth, and the dome of the mouth is wider laterally. The growth of both maxillary bones and alveolar process is downward, and while the dome seems to rise in height, yet it does not, or it would decrease the opening of the nasal tract, which we see does not occur. The glenoid cavity is fairly well defined, though not nearly so deep as in the adult. There is great freedom of movement of the condyle, a fact which accounts for the ease with which a malposition of the lower jaw is attained during childhood.

Fig. 1 shows the development in the adult. Here we see the final enlargement of the nasal opening, with the full development of the antrum.



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The antral development is greater in the male than in the female, and continues longer before it reaches completion. The dome of the mouth has reached full size, as the permanent teeth have elongated fully as to roots. The development depends largely upon the use the teeth receive, being greatest where the teeth are most used, and being more or less deficient where for any reason there is lack of full use of these organs. A fully developed dome does not occur in cases of any considerable malocclusion, where by the nature of things the teeth cannot receive full use.

Causes and Effects of Mouth Breathing.

Having considered normal development, we are ready to study the effects of mouth breathing. Immediately the question arises as to what causes mouth breathing. There are many inflammatory conditions known to the rhinologist which tend to enlarge the soft tissues of the nasal tract, reducing the size of the air passages very materially, and in some conditions closing them almost entirely, compelling breathing through the mouth to get the necessary oxygen to sustain life. It is not the province of this article to deal with these diseases specifically, but a few of the most important will be mentioned. First are the different varieties of chronic hypertrophic rhinitis—called catarrh by the laity—in which the tissues are so engorged with blood and otherwise thickened that the air passages are very much reduced. Next is atrophic rhinitis with polypi, which growths sometimes completely stop the nasal opening. But most common of all is hypertrophy of the pharyngeal tonsil, usually called adenoid vegetation, or simply, adenoids. Adenoids are distinctively a trouble of childhood, and afflict probably half the children of the country, usually without attracting attention, because of their painlessness. They usually become established at from six to ten years, and are the most prolific cause of mouth breathing.

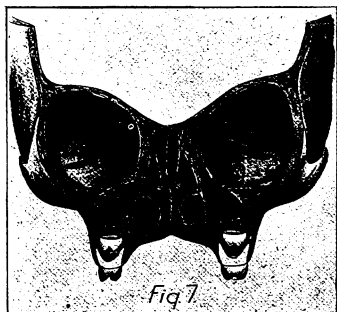
It is sometimes gravely asserted that mouth breathing is caused by the shape of the dental arch and the high vault of the mouth, but these rinings are products of mouth breathing, not causes, as we shall see. There are many other contributory conditions toward establishing mouth breathing, but all operate in the same way, namely, by helping to close the air passages. Without further discussion it may be said that it is settled that mouth breathing occurs just in proportion as normal breathing becomes difficult, and this unconsciously on the part of the subject. The demand for oxygen is ceaseless, and is immediate. If it is not readily supplied through the nose, the mouth opens at once to admit the life-sustaining element. The subject has no time to meditate on the harmful effects of breathing unwarmed air; oxygen he must have, and at once, and he gets it in the easiest way he can.

Fig. 7 shows a section through the face of a young mouth breather

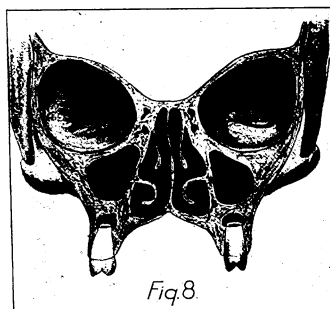
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(aged eight), where the condition has been established some little time, as it may easily be at this age. Already the nasal opening is reduced slightly; the antrum is less developed than normal, as also the maxillæ, which in turn gives less room for developing teeth. There is narrowing of the dental arch due to lack of development, for the temporary arch normally widens bodily in a lateral direction as the maxillæ develop, a fact not generally recognized. This makes the dome appear slightly higher than usual, though possibly it is not. However, the walls and septum of the nose develop from above downward, and it seems reasonable to believe that lack of development on their part may tend to a slight raising of the roof of the mouth.

The same thing is seen in Fig. 8, which represents the same case at thirteen years. Here the roof of the mouth seems higher than normal, and we all know the face is much narrower than normal in such a case. The



Mouth breather, eight years.



Mouth breather, thirteen years.

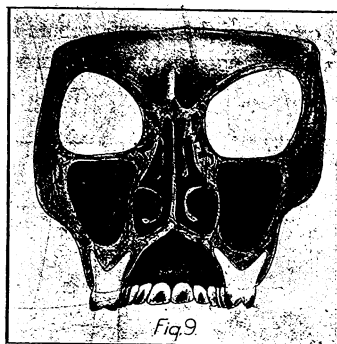
nasal opening is much compressed, the maxillæ small, and of course the antrum. While this drawing is not from an actual specimen, it is not overdrawn as to the actual conditions present in a majority of such cases.

Up to this age, development has merely been held back by mouth breathing. If the cause is removed and normal breathing made possible, Nature will soon make amends, and at least partially develop the stunted parts; and if helped by the orthodontist, will fully develop them in most cases. Spreading the arch acts as a stimulant which meets with a quick and ready response in increased growth and development of all the bones and tissues of the face. The results in this line are something wonderful indeed under skilful and intelligent treatment. But if not done by this age—or very soon after—the matter is decidedly different; development of the entire bony framework of the face gradually comes to a stop, and



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by twenty-two years we have the condition shown in Fig. 9, which then is practically permanent through life. Here is a small and narrow nasal opening, with turbinates encroaching, awaiting the rhinologist's removal in the effort to enlarge the air passages. The maxillæ are under developed, also their contained antra, and though the adenoids may have almost entirely disappeared by this time, or the catarrh have been cured, yet the effects of all these years lack of normal breathing still remain. The voice is thin, with a decided nasal twang; the dental arch is narrow, with a vault usually—though not always—higher than normal. No treatment at this age on the part of the orthodontist is likely to aid materially in enlargement of the bones of the face (and with them the nasal passages), for the



Mouth breather, adult.

period of growth is past, and the stimulus given by spreading the arch meets with no response in quickened growth, as when done earlier. The case is doomed to practically this condition during the rest of life.

Effects of Mouth Breathing on the Dental Arch.

In addition to the abnormal development of the bones of the face shown, the shape of the dental arch is affected by continued mouth breathing. This has been recognized in a way heretofore, but I believe the full effects have never been fully shown. The "mouth breathers arch" has often been mentioned, though just what is meant by this term has never been clearly described—at least not to my knowledge—and while considerable rambling discussion has occurred over the origin and meaning of the malformations found in connection with mouth breathing, nothing definite or dependable has yet been given.

There are two distinct forms of dental arch that result from continued mouth breathing during the period of development; each is distinct from the other, and both are distinct from a normal arch. These arches are found only in cases of mouth breathers, and are always found in greater

or lesser degree in such cases. This latter point is disputed by certain rhinologists, who claim that a normal arch is sometimes found in mouth breathers; but in all cases of this kind that I have seen, I have found that the first indications of a mouth breather's arch were forming, and that the eye of the rhinologist, inexperienced in dental matters, had failed to distinguish it from a normal arch.

These two forms of mouth breather's arch I shall call the U-shape* and V-shape varieties, for want of better names. Before describing them and their evolution in detail, it should be recalled that all irregularities of the teeth are progressive, and that these arches gradually assume these forms, the same as the bones of the face gradually develop abnormally. It should also be stated that there is a difference in degree in these cases, some showing the characteristics faintly and others showing them strongly,

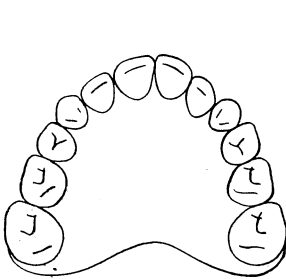


Fig. 10.

U-shaped arch, eight years.

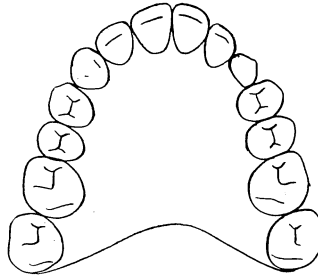


Fig. 11.

U-shaped arch, thirteen years.

but that they may always be discovered in some degree in all cases where chronic mouth breathing occurs during the years of growth and development. The illustrations given show average cases, neither the least affected nor the very worst.

The U-shaped arch somewhat resembles the letter U, as its name would indicate. In its earlier stages it is but little differentiated from a normal arch, though in its later forms it is easily recognized. Fig. 10 shows this form of arch at eight years, when the first molars and the four incisors are the only permanent teeth yet erupted. Here it will be noticed that the incisors are protruded forward, merely enough that it can be noticed. We have already seen (Fig. 7) that the maxillæ do not develop laterally the normal extent, and there is a consequent slight narrowness of the arch in the region of the molars. This narrowness and the protrusion of the incisors is often small in extent, and is easily passed over as

*Name suggested by Dr. W. M. Hyatt.



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normal. But as the case progresses it becomes more noticeable, and is easily distinguished in Fig. 11, which shows the case at thirteen years. Here all the temporary teeth but one cuspid have been lost, and the second molars have been added to the arch. The narrowness through the region of the bicuspid and first molars is quite apparent, and attention is again called to the lack of lateral growth of the maxillæ shown in Fig. 8.

Fig. 12 shows the full development of the U-shaped arch, after the third molars are added, the case shown not being an extreme one. It is seen that the greatest narrowness is in the bicuspid and first molar region, the second molars being less affected, and the third molars still less. The incisors are protruded somewhat, or correctly speaking, are placed labially to the line of normal occlusion. In some cases the incisors are protruded

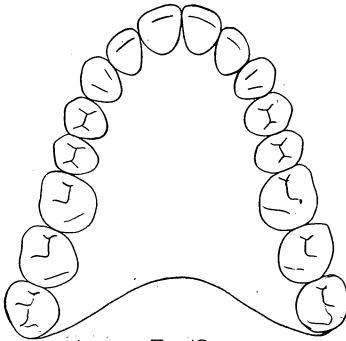


Fig. 12.

U-shaped arch, adult.

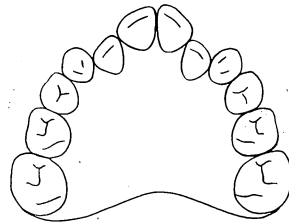


Fig. 13.

V-shaped arch, eight years.

much more than represented; in some there is space between the teeth, varying from a little between the centrals and laterals up to fully an eighth of an inch between each tooth back even to the second bicuspid.

In all cases of the U-shaped arch, from the earliest beginnings to the fully established forms, the following characteristics may be seen in some degree; the arch is round in front—U-shaped—there is usually slight protrusion of the incisors; there may or may not be space between the teeth; the teeth are seldom in torso-occlusion, and very slightly in any case; the laterals are as prominent relatively as the other teeth; the cuspids are not more prominent than the rest, and almost always erupt fully; the arch is narrow in the bicuspid and first molar region, being less affected in the region of the second molar, and still less in that of the third molar.

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The V-shaped arch differs from the U-shaped in many details, though in a general way there is a similar protrusion of the incisors and the same narrowness in the bicuspid and molar region. As the name indicates, the arch resembles an inverted V, and it is easier to distinguish from the normal than the U-shaped arch, especially in the earlier stages. Figs. 13, 14 and 15 represent the development of the V-shaped arch at the ages of eight, thirteen and twenty-two years, respectively. The chief characteristics are: the arch is never round in front, but is always more or less V-shaped, the apex of the V resting at the mesio-occlusal angle of the centrals; the incisors appear to protrude more or less, though this is usually more apparent than real; there is seldom if ever space between the teeth; the centrals are usually both in torso-occlusion, though sometimes but one may be, and occasionally neither one is appreciably so; the laterals are always crowded within the line of normal occlusion, and almost invariably in torso-occlusion, usually considerably so; the cuspids (permanent) nearly always appear prominent, and many times are not fully erupted;

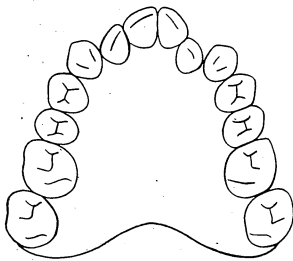


Fig 14

V-shaped arch, thirteen years.

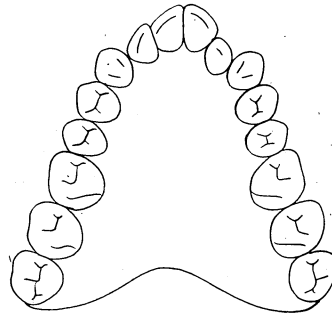


Fig. 15

V-shaped arch, adult.

the arch is narrow in the bicuspid and molar regions, almost exactly like the U-shaped arch.

These two forms of dental arch are distinct from each other at all times; that is, the characteristics of one never mix nor combine with the characteristics of the other, and neither form ever merges or changes to the other at any period of development; each is distinct from the beginning. Both forms are unmistakably connected with mouth breathing, and as before stated, are found nowhere else, and further, are always to be found in some degree connected therewith. The statements of rhinologists that these forms are not always present are undoubtedly founded on inac-



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curate observation, which is not at all strange, for the rhinologist sees the teeth only with a layman's eyes, and only as an incidental matter even then. The trained eye of the orthodontist will have no trouble in distinguishing the characteristics of these arches in all cases. The two forms of arch are about equally divided in point of numbers, there seeming to be as many of one as the other.

The meaning of this difference in form of the mouth breather's arch is a mystery to me. As yet I have no explanation to offer, unless it might be that biting the lower lip, as pointed out by Dr. Angle, might have some influence in producing the U-shaped form, and failure to assume this habit might result in the other. This hardly appears a probable solution when it is remembered that lip biting is a secondary incident, and occurs because the lip falls in between the teeth, and the habit is assumed largely on account of the tendency of the muscles to be doing something. Lip biting, therefore, usually does not begin till the case is somewhat established, whereas the particular form of arch is established from the beginning. Outside of this conjecture, however, I have nothing to offer in the way of explanation. Here is certainly a field for further investigation.

It will be noticed that the upper arch only has been mentioned and illustrated so far; the lower now demands our attention. Strange as it may seem, the lower arch is comparatively little affected in mouth breathing. With the U-shaped upper, the lower is usually quite regular in form, excepting a very slight narrowness in the bicuspid region not nearly so great as the narrowness of the upper. The incisors and cuspids are usually quite regular, although somewhat elongated beyond the normal, especially in the later stages of the case. With the V-shaped upper, the lower incisors and cuspids are usually somewhat overlapped, and are elongated beyond the normal as before. The arch is slightly narrower in the bicuspid and first molar region in comparison to the U-shaped lower, but still not so narrow as the upper in the same regions.

Cause of Narrowing of Upper Arch.

The fact of the excessive narrowness of the upper arch in mouth breathing naturally leads to the question of its cause. Many replies to the question have been given, no one of which seems to answer it fully.

One of the most common ideas entertained is that pressure inward by the cheeks when the mouth is opened for breathing produces the narrow arch and high vault of the mouth breather. That considerable pressure inward is possible can easily be demonstrated by placing the finger between the cheeks and gums, high up alongside the bicuspid and molars, and then opening the mouth; pressure inward is easily felt. It would seem that this inward pressure would affect the lowers the same as the uppers, whereas the lower arch is but little affected.

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The same experiment shows considerably less inward pressure on the lower teeth than on the upper.

But before accepting this explanation as correct, it should be remembered that there are other contributory causes to the condition, and that probably no one cause is responsible for the condition, but a combination of several; and it is not settled that the real cause or causes have yet been discovered. It is certain that the teeth are very easily moved at the time of their eruption, and that considerable pressure is exerted inward by the cheeks of the mouth breather, seemingly more upon the upper than on the lower; and it is also certain that mouth breathing through the hours of sleep would amount to about eight hours out of the twenty-four, or practically one-third the time; yet we are not certain that this is the chief cause of the malformations of the mouth breather. While inward pressure of the cheeks might easily influence the position of the teeth and accompanying alveolar process, this force certainly does not seem great enough to influence the shape of any other bony structure, nor cause the high vault of the mouth breather, if the vault really is higher than normal.

The protrusion of the incisors is favored by the peculiar changes in the lip as mouth breathing advances. From lack of performance of function the nose is more or less non-developed; the nostrils are contracted, and the tip of the nose drawn upward. This contraction extends to and influences the upper lip, which is also gradually drawn upward, covering the teeth less and less, thus slowly losing its own function. As it performs its duties with decreasing regularity, it changes its form from a thin flat band to a round thickened roll of muscle, and thus adds to its own inability to cover the teeth properly. It will be recalled that the incisors of the mouth breather usually appear quite protruding and prominent. This is often more apparent than real, on account of the short and thick lip failing to cover them. The restraining influence of the lip removed, however, the incisors sometimes stray widely from their normal positions, and the protrusion is quite considerable in many cases.

There is another feature that adds to the protrusion of the teeth, the habit of biting the lower lip, as pointed out by Dr. Angle. As before noted, I believe this habit to be a secondary affair, and that it does not occur till the mouth breathing has become somewhat established, when the lower lip falls readily beneath the upper teeth, and the habit of lip-biting occurs unconsciously as a result of the nervous unrest always present when the occlusion does not give a resting place to the lower jaw. It is a settled fact that wherever the lower jaw does not find a regular and comfortable resting place by reason of a fixed occlusion, the muscular action becomes uncertain and variable, and sometimes uncontrollable except by considerable effort on the part of the patient. The lack of complete mus-



cular rest leads to a condition of unusual nervous irritability and activity, and in turn this produces muscular action of all the parts affected, varying in degree from a mere uneasy movement of the lips or jaws up to continued grinding of the teeth accompanied with muscular twitchings or other unusual and abnormal movements. In case of a mouth breather, the upper arch gradually narrows while the lower expands to almost full width, thus giving a constantly changing occlusion—or rather mal-occlusion—thus giving a basis for the nervous disturbance noted, and leading to lip-biting as one of its manifestations. When the habit is once established, however, it aids materially in increasing the unsightly prominence of the upper teeth.

**Cause of
High Vault**

It has now been seen that the narrowness of the upper arch and the protrusion of the anterior teeth may be reasonably accounted for by reason of inward pressure of the cheeks and failure of restraint of the upper lip, added to in some cases by biting the lower lip, but the narrowness of the nasal tract and seeming height of the vault are not thus reasonably explained. It would seem that the mouth breather's malformations must be the result of several minor causes, coupled with failure of development arising from lack of proper nervous stimulation. To reach the ultimate cause or causes of mouth breathing would involve many questions of both physiology and pathology, as well as deep study of the laws and effects of heredity and degeneracy, which is altogether beyond the scope of this effort. Without attempting to reach the ultimate cause, it is sufficient for all practical purposes to the orthodontist to know the immediate and exciting causes of the mouth breather's troubles.

While passing, it may be of interest to state another explanation sometimes given as to the mouth breather's high and narrow vault, which is that when the nasal tract is stopped up the pressure of the atmosphere "caves in" the tract; but this cannot be, for even if the opening is stopped up completely posteriorly, it is still open anteriorly, and a "cave in" could not occur without a vacuum. The explanation of "negative pressure" being the cause is clearly untenable.

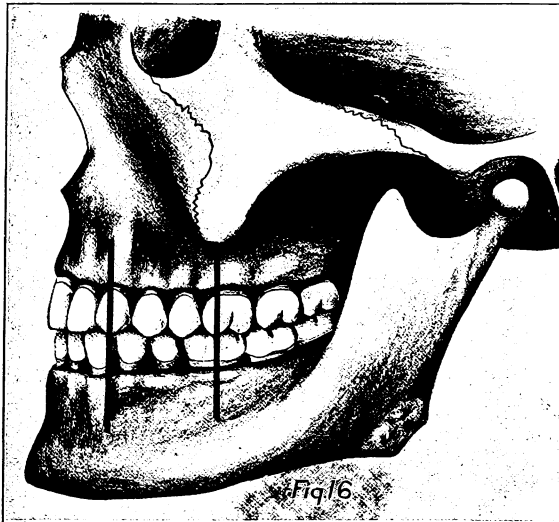
The question still remains whether or not the roof of the mouth is higher than usual in the mouth breather. In some cases it undoubtedly is so; in others it seems very high till the arch is expanded, when it appears of the usual height; and in others it seems no higher than usual at any time. The question is interesting, especially in the cases where the vault seems of the ordinary height after expansion; but there arises the new question of whether or not the roof of the mouth was pulled down in expansion. We must leave this as one of the unsettled points, though the

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supposition is that the mouth breather's arch averages somewhat higher than normal.

Retrusion of Mandible.

There is still another feature that invites our attention, though it is a secondary result of the narrowing of the upper arch, and is not exclusively connected with mouth breathing, being found in many other cases where a similar narrowing of the arch produces malocclusion. I refer to the retrusion of the lower jaw almost always found accompanying the mouth breather's arch. This retrusion may be explained as follows: The upper arch becoming more contracted than the lower one, the cusps of the lower teeth cannot interdigitate between cusps of the uppers



Normal occlusion, side view.

as usual, and the lower jaw cannot find a resting place in the normal position; and in the search for such resting place it finds relief slightly posterior to normal, where also the inclined planes of the various cusps would tend to force it from the narrowing of the upper. As the upper continues to keep narrow while the lower widens, the lower gradually moves backward more and more, till it finally retrudes the width of an entire bicuspid. As a reminder of what constitutes normal occlusion, and as a guide in determining malocclusion, Fig. 16 is given. This shows a side view of a normal occlusion, where the lines crossing the molars and cuspids indicate that each cusp is in its appropriate place, and likewise the entire lower jaw is in its proper position, and in harmonious relation to the upper. The



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mesio-buccal cusp of the upper first molar occludes in the buccal groove of the lower first molar, and the upper cuspid occludes posterior to the lower cuspid. These are the most prominent landmarks, but the occlusion of any of the other teeth may be taken as a guide also. Fig. 17 shows a contracted upper and a practically normal lower, with a line (A) drawn from cusp to cusp of the lower first bicuspid. These cusps normally should occlude in the embrasure between the upper cuspids and the first bicuspid on each side, but the line B (exactly the same length as line A) shows that the lower cusps would occlude somewhere labially to a proper position, giving anything but a satisfactory closure of the jaws. But by re-

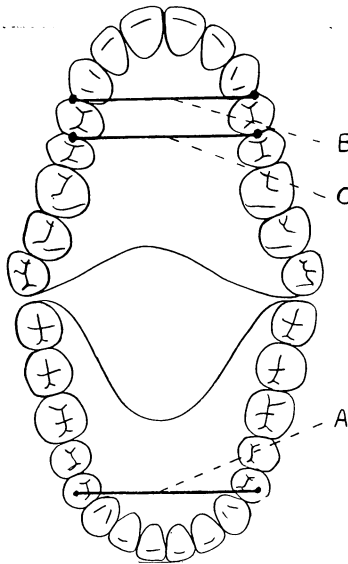


Fig. 17.

Development of retrusion.

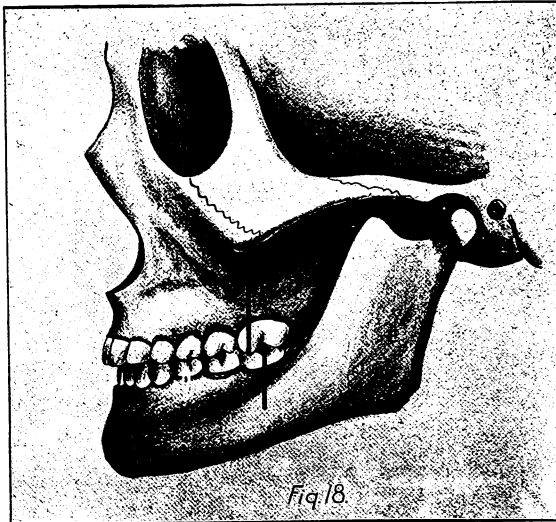
trusion of the jaw till the same lower cusps would occlude in the embrasure between the upper bicuspid, as shown by line C, a fairly comfortable occlusion would be obtained, as these teeth are the right distance from side to side to accommodate the lowers. Every other cusp on the lower teeth would be accommodated one notch back of the normal in like manner.

It must be remembered that the lower jaw is a very movable fixture, and is simply slung against the upper by the muscles, much as the springs of a prepared skull hold the lower jaw up against the upper. It has also been seen that the glenoid cavity is very shallow during the period of growth, allowing great freedom of movement of the condyle. The idea

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that the lower jaw is fixed in its position upon the eruption of the first molars, and does not change after that, is a mistaken one; though the proper interdigitation of the cusps of these teeth is a powerful factor in holding the jaw in its proper position, yet there are often forces sufficiently powerful to overcome their restraining action, and the jaw is either re-truded or protruded, according as the mechanics of the occlusion favors. A malocclusion of these teeth is as powerful a factor in producing a change in position of the jaw as a normal occlusion is in maintaining a correct position.

Retrusion is the almost invariable accompaniment of mouth breathing, though in perhaps two per cent of the cases the lower jaw is not forced



Beginning retrusion, eight years.

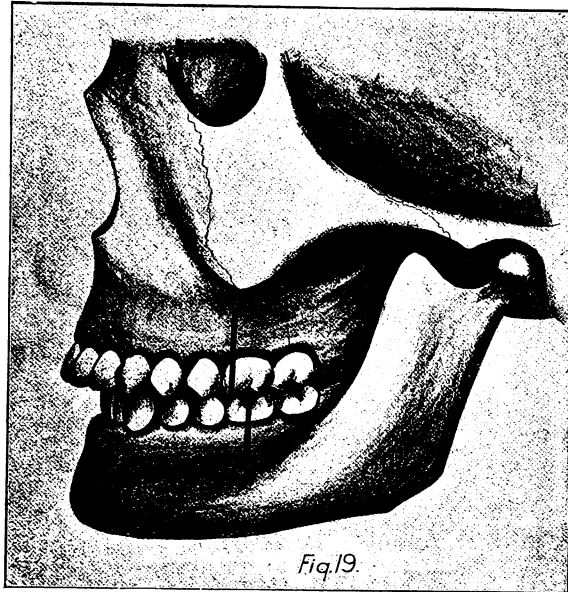
back far enough to make any practical difference. This retrusion may be on both sides or only on one side, and may vary from the width of a bicuspid on each side to just enough to be noticeable on one side only. So far I have never seen a case of protrusion of the lower jaw due to mouth breathing, as the mechanics of the case always favors retrusion rather than protrusion.

Of course the retrusion mentioned does not occur all at once, the same as the form of the dental arch or the bony development does not arrive at maturity at once. The evolution of all malocclusion (and this term includes the relative positions of the jaws) is gradual and progressive. Figs. 18, 19 and 20 illustrate the gradual progression of retrusion.



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representing a case at eight, thirteen and twenty-two years, respectively. In Fig. 18 the interdigitation of the first molars is sufficient to keep the lower partially held to a correct position, though slight retrusion has set in. In Fig. 19 the narrowing of the upper (see Figs. 11 and 14) is greater relatively than in Fig. 18, and the cusps of the first molars no longer hold the lower jaw at all in proper position. In fact, these very cusps, being long and sharp, and occluding into equally deep depressions, are very powerful factors in wedging the jaw out of position. As there is now considerable difference in width between the upper and lower arches in the first molar region, these molars are forced out of the proper relation to



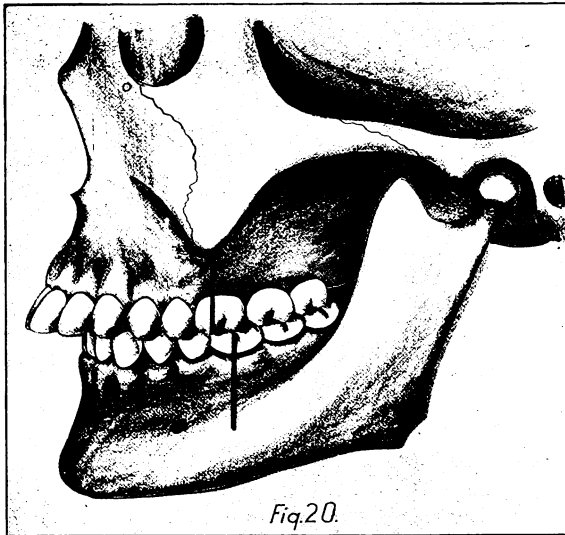
Half developed retrusion, thirteen years.

each other, and the various inclined planes of their occlusal surfaces bring more force than usual upon certain of the antagonistic planes upon every closure of the jaws, thus mechanically tending to wedge the upper teeth forward and the lower teeth backward. The teeth are quite solidly set in the jaws, however, and the tendency would be to move the jaw itself if its resistance to movement was less than the resistance to movement of the teeth themselves within the jaw. As we have seen, the upper jaw is fixed, and therefore remains practically unchanged; the lower is movable, and therefore it is the one to be forced out of place.

In Fig. 19 the cusps of the molars occlude almost end to end, as also

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the bicusps, which at this age begin to be a factor in determining the closure of the jaws. As long as the lower cusps occlude upon the mesial slopes of the cusps of their antagonists, the mechanical tendency is to partially hold the lower jaw forward in place and prevent its moving back, and the process of retrusion is slow; but as soon as the summits of the lower cusps retrude beyond the summits of the antagonizing upper cusps, then every firm closure of the jaws tends to force the lower backward, and everything favors rapid retrusion from then on. Fig. 20 shows the establishment of complete retrusion, and shows also the apparent great protrusion of the upper teeth, which appearance is really mostly due to the retrusion of the lower present. This retrusion also brings the lower incisors to



Complete retrusion, adult.

a position much posterior to where they belong, and where they have no antagonism with the uppers. Following the natural tendency of all teeth to elongate till they meet resistance, these incisors elongate beyond the normal, and in cases of retrusion of long standing are found in close contact with the gum tissue of the roof of the mouth, and in extreme cases may even lacerate it.

Between the thin narrow face of the mouth breather, with the protrusion of the upper teeth and retrusion of the lower jaw, the facial lines in such cases are much distorted, and great inharmony of expression occurs, giving a peculiar look characteristic of the mouth breather, of which Fig. 21 is a partial representation. This expression has been recognized



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before, but it has not been sufficiently emphasized in dental literature. In fact, the mouth breather's condition in general has been attributed to many incorrect and even absurd causes, chief of which is that the habit of thumb-sucking is the cause of the dental arches already described, and the inharmonious facial lines of Fig. 21. This piece of inaccuracy and absurdity never had any real foundation for existence, except a hastily formed conclusion, like many other absurdities in dental affairs.

It is true that the mouth breather's arch is of such shape that the thumb usually will fit it nicely, and it is also true that all children suck their thumbs more or less; but right there all relation between cause and effect stops

Thumb-sucking.



Effects of retrusion; condyle impinges on eminentia articularis on protrusion of jaw to normal position.

short. The habit of sucking the thumb is common to all children whatsoever, the rich and the poor, the great and the lowly alike, but the arches described are found in mouth breathers exclusively; if thumb-sucking caused the trouble, all children would be affected alike. If thumb-sucking were a cause of the trouble, all temporary arches ought to be affected, whereas it is well known the temporary teeth are almost invariably regular. To affect the shape of the permanent arch the habit must be continued to the time of the eruption of most of the permanent teeth, at least to the tenth or eleventh year; while the fact is, thumb-sucking is a habit of very early childhood, and is rarely continued beyond the second year, or the period when the hands have plenty of other employment. Further,

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such a habit must needs be indulged in most of the time to affect the dental arch; an occasional indulgence could do no harm, and any continued following of such a noticeable habit would certainly be noticed by parents, or teachers at school, and vigorous means taken to stop it.

In making inquiries of parents regarding the habit in mouth breathing children, I have never yet found a substantiated case where thumb-sucking was present at all to the degree necessary to cause change in the dental arch; the parents sometimes declared their suspicions of the presence of the habit, yet when questioned closely never had actually seen it, except occasionally. The ideas concerning the subject are floating bits of rumor and superstition, equal to the belief that extraction of the "eyeteeth" causes blindness, etc. In any cases where the habit really might exist in connection with mouth breathing, I think it must be assumed in response to the demand for action on the part of the muscles of the jaws, which might find relief in chewing or sucking the thumb, instead of biting the lip, or other similar gymnastics. This is the only reasonable connection I can imagine between thumb-sucking and the mouth breather's arch, and believe such cases must be rare indeed.

Yet this fallacy is to be found in text books, in dental journals, and is always mentioned by somebody at every dental meeting. Only lately has a book appeared, from the city of Boston itself, written by a professor in a dental college, and intended for use in educating (?) the public, in which a cut appears very similar to Fig. 21, and very prominently labeled "effects of thumb-sucking." The time for such stuff—to call it by no harsher name—is certainly past; then away with such absurdities for all time. Thumb-sucking has nothing more to do with producing the mouth breather's arch than has a liking for music, or an appetite for pickles.

Another feature connected with retrusion merits
The Temporo- notice; the condition of things at the temporo-max-
Maxillary Articulation. illary articulation, and the effects of retrusion upon development of the lower jaw itself. The details of the relations of the condyle and glenoid cavity in retrusion have not been discussed, and I believe are imperfectly understood. It has been thought, in a vague sort of way, that when retrusion occurs there is sufficient absorption of the fibro-cartilage of the glenoid cavity to allow the condyle to assume a new position posterior to the old. This I once believed and taught, but I am now convinced that this is wrong, after some considerable anatomical study. In this study, I had the opportunity to examine all the subjects in the anatomical laboratory of the medical college of the State University of Iowa, and I and my assistants investigated every temporo-maxillary articulation in the entire lot, some one hundred and sixty in all, hoping to determine the average amount of retrusion pos-



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sible by dissecting away the cartilages of the glenoid cavity, and accomplishing the utmost retrusion the case would permit. We had many practically normal occlusions, with some cases of retrusion, but we quickly found that the ordinary amount of retrusion obtained by cutting out the cartilages was but from one to two millimeters, an amount entirely insufficient to allow retrusion the width of an entire bicuspid.

The cases of retrusion showed a position of condyle not to be distinguished from a normal occlusion. In *not one case* did we find retrusion possible to the extent of one bicuspid, or anywhere near it, and while we were not extremely accurate in our measurements (it being a comparatively hurried task on account of the advanced state of the subjects), yet I am certain that the greatest amount of retrusion possible would scarcely exceed two millimeters, and in most cases was not that much. While examination of these comparatively few cases does not fully establish the matter, yet I am convinced we would have found some evidence out of nearly one hundred and sixty cases if greater retrusion was possible.

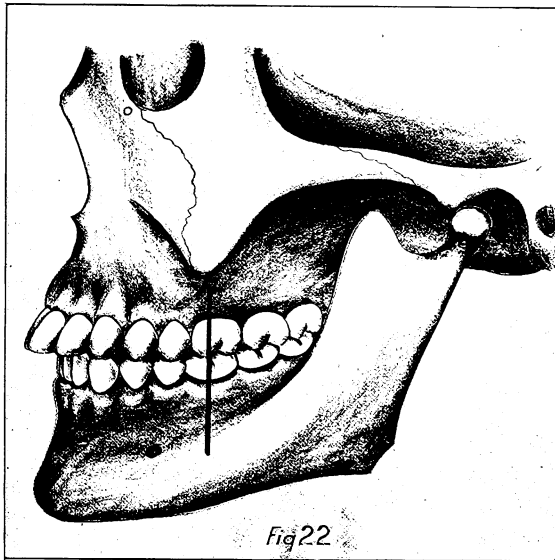
The great point, however, was the fact that the condyle seemed exactly the same in the cases of retrusion we found, as in the cases where the lower jaw was in normal occlusion, and presumably in absolutely correct position at the temporo-maxillary articulation. In cases as shown in Figs. 20 and 21 it is evident that the condyle does not move back the same distance as the body of the jaw. This must be accounted for either by a change in the shape of the ramus, the moving backward of the lower teeth or moving forward of the uppers, or else lack of full development of either the body or the ramus of the lower jaw itself—or more probably, lack of development of both body and ramus.

Examination of both the skulls of such cases and of the living subject does not show any appreciable change in the ramus in cases of retrusion; such a thing would certainly show where the retrusion exists on one side only, and there we find no practical difference between the retruded side and the non-retruded side; therefore we conclude there is no appreciable change in the ramus. If the lower teeth were moved backward bodily in the alveolar process, and the body of the bone remained as usual, the point of the chin would remain prominent, and there would be but little disturbance of the facial lines; whereas the facial outline is always disturbed in direct proportion to the amount of the retrusion. If the upper teeth were moved forward, there would be plenty of space at the tuberosity of the superior maxillary for the third molar, and most likely space between the last molars, and especially would there be a difference in the two sides where the trouble occurs on one side only; but in fact we find no difference between the two sides in the latter case, and the third molars are just as crowded at the tuberosity in a mouth breather as in any

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other case. As to the notion that the whole superior maxillary may be moved forward, a few moments study of the articulations of that bone will show how impossible such a thing is. In such an event the superior maxillary must drag with it the frontal, ethmoid, malar, inferior turbinated, vomer, palate and other bones, which would certainly distort the whole anatomy of the head. Examination of a mouth breather's skull shows no such distortion, and further shows that in case of protrusion of the upper teeth, the change in bony structure is confined almost exclusively to the alveolar process, or at most to the very anterior edge of the maxillæ proper.

The evidence all goes to show that in retrusion the lower jaw itself



Effects of mouth breathing on facial lines; so-called results of thumb-sucking.

is undeveloped. It has been shown that everything about the case gradually assumes its form—the development of the maxillæ, the sinuses, the nasal opening, the retrusion of the lower—and the non-development of the lower jaw also gradually occurs as part and parcel of the effects of mouth breathing, the amount of non-development being in direct proportion to the amount of the retrusion. The effects of this are seen in Fig. 22, where the fully retruded jaw of Fig. 20 is moved forward the width of a bicuspid, a thing that is always found quite easy in such a case, as the lower jaw is always found extremely movable in all cases where the occlusion is not correct. Here the condyles impinge on the eminentia articularis (usually giving a grating sensation to the patient). This may be readily detected



by placing the fingers just outside the condyles, when the space behind them can easily be felt through the tissues, and it can easily be seen that the lower jaw is lacking in development.

It may be argued against this conclusion that the lower jaw is given a certain natural impetus to growth, just like any other tissue, and that it will grow just so large and no larger nor smaller, and that the mere fact of occlusion of the teeth has nothing to do with the development of this bone; in fact, that if retrusion occurs, it is because of non-development, not the non-development the result of the retrusion. In answer to this it may be said that the law of modification of growth according to use or disuse pervades every tissue and organ of not only our bodies, but of every living thing as well, and that this universal law can hardly be set aside to accommodate a theory to prove a convenient point otherwise. There can be no reasonable doubt that the normal use of any organ influences its development within certain reasonable bounds, and that nowhere is the plasticity of the bony tissues greater during development than in the bones of the head and face. The lower jaw particularly is subject to outside influences during its growth. The other bones of the face and skull, by virtue of their articulations and close connections in blood and nerve supply, are liable to be affected together in any change, normal or abnormal; the lower jaw has no direct bony articulation with any other bone, and its nerve and blood supply are different in character in that it does not have the direct lateral connections of the upper part of the face with adjoining tissues. In development it seems a law unto itself, and except in cases of downright malformation, the body and ramus seem to develop simply enough to keep the condyle in the glenoid cavity, and no more. If the body is not required to develop forward by the occlusion of the teeth, the connecting bone between body and condyle is not called for, and is developed according as needed, which certainly seems a clear following of the laws of growth according to use and disuse, as prevails throughout the living world.

Treatment of Mouth Breathers.

The influence of the foregoing observations upon the treatment of the mouth breather must be plain in many instances. It is readily seen that early treatment is the most valuable, and in fact is imperative to produce anything like perfect results. If the abnormal arch and nasal tract of the mouth breather are to be reduced to anything like normal, treatment must be begun before the worst stages are reached, and before the period of growth is over, that Nature may still be in a mood to change her work. As before noted, expansion of the arch during the period of growth stimulates development of the bones of the face, and if normal breathing is made possible at the same time, Nature will soon make

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amends for her delay, and a normal condition of things begins to appear. Development of this kind proceeds for several years, even long after the dental arch has been fully widened, and really forms the most wonderful and most gratifying result of the whole operation.

The growth of the bones of the face is most active at from eight to thirteen years, and if treatment is undertaken then the best results may be expected. If begun even at fourteen to fifteen years, there are yet four to five years of development ahead in which to catch up with the delayed growth, but if delayed longer, only imperfect results must be expected. By eighteen to nineteen years growth of the bones of the face is practically over, and very little can be accomplished by treatment then. The compressed nasal opening may be enlarged a trifle, but hardly enough to allow free breathing through it. If the treatment is delayed to twenty-five, the faintest hope need not be entertained of any reliable result. Mouth breathing has become a direct necessity to sustain life, for no matter what the throat or nasal treatment, the compressed opening cannot be enlarged, and enough air for breathing cannot possibly pass through.

This early treatment is also necessary to get full development of the lower jaw. As has been seen, non-development of this bone is one of the results of the retrusion almost invariably accompanying mouth breathing, and it takes time for Nature to make up delayed development here as elsewhere. If allowed to stand till the period of growth is past, and an attempt is made to have the lower jaw assume a new and correct position, as in Fig. 22, the condyles impinge on the eminentia articularis to such an extent that any considerable mastication would be out of the question, and it is sometimes actually painful to maintain the jaw in this position any length of time.

The elongation of the lower incisors in such a case is also a source of great difficulty in treatment, as they either must be much depressed in their sockets, or else be ground off on their incisal edges to such an extent as to endanger the pulps, if the case has been of long standing. Unfortunately there is no appliance or treatment yet devised which will operate with certainty in practically reducing these teeth to anything like a normal condition when once badly elongated as under discussion. A small degree of reduction can be successfully obtained, by several well known appliances, but early treatment is the best cure.

Two further features of treatment remain for discussion, which are not so plainly suggested by the observations made. The first is that a normal occlusion is one of the final results that must be obtained for any real or lasting success in any case of this kind. Normal occlusion means normal position of the lower jaw, normal shape of both arches, normal position and function of every tooth and every cusp, and normal pressure





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on every tooth during mastication. None of these things can be without the other; none can be lacking; all must be present together. Such a perfect occlusion *only* will be self-maintaining when the retaining appliances are finally removed and the teeth left to themselves to either stay in place or finally drift towards the old positions where natural mechanical forces compelled them to go in the first place.

Normal occlusion must be the final result always in view during treatment. This is next to impossible to obtain unless the case is treated early, and is clearly impracticable in the later stages, though theoretically not impossible. Normal occlusion cannot occur with a retruded jaw, nor can a retruded jaw be coaxed into a correct position if painful to remain therein. In those cases where a normal position of the jaw is hopeless of attainment, there must be a resort to that doubtful expedient of extracting one or more bicusps. This is simply substituting one malocclusion for another, and usually without change for the better. Sometimes there may seem to be an improvement of the occlusion, but the teeth usually fail to stay in these makeshift positions, and the last end of the case is as bad as the first. Early treatment producing normal occlusion is the only practical treatment, and late operating requiring extracting is usually but change without improvement. The inharmonious facial lines are all left, remaining as an announcement of imperfection. In those cases in which extraction is resorted to where normal occlusion might be obtained by proper treatment, no words can be strong enough to voice our condemnation, nor express our regret for the ignorance back of it all.

The last feature of treatment in relation to these observations is the fact that in addition to securing normal occlusion, the mouth breathing must be entirely done away with to expect any permanency of results. To treat a trouble and not remove its cause is to invite failure. The cause of the mouth breathing is the cause of the malocclusion, and the bottom of the matter must be reached. To not remove the cause is to leave it operating to produce the malocclusion all over again after the teeth have been moved, and the treatment is supposedly completed. Whether or not the inward pressure of the cheeks causes the mouth breather's arch, it is nevertheless certain that slowly and gradually this form of arch returns after treatment, if the mouth breathing is not completely eradicated. Many have been the failures from neglect of the necessary medical or surgical treatment, and the orthodontist must recognize that his treatment is only part of what is needed. He alone cannot succeed. It is true that the orthodontist's work does much to establish a normal condition of things, but the expansion of the arch and the establishment of normal occlusion alone will not cure adenoids nor chronic hypertrophic rhinitis. It is foolish to undertake treatment of such a case, except on the condition that the

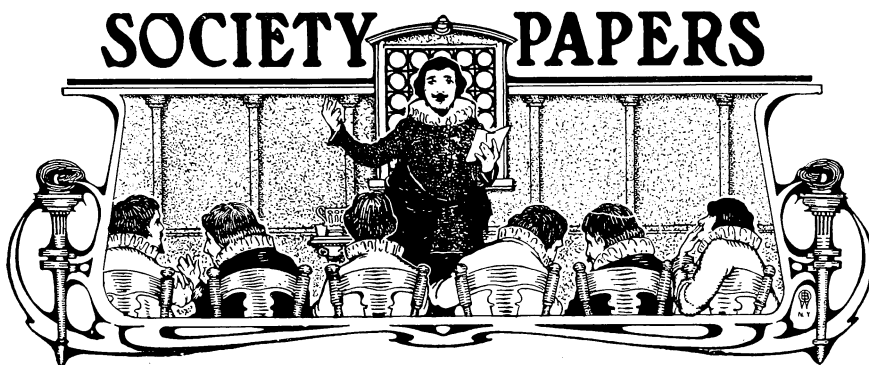
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necessary medical or surgical treatment also be done, and be faithfully carried out the same as the dental treatment. This much is settled in advance—if the cause of the mouth breathing is not removed, the arch will slowly but surely return more or less to the old form upon removal of the retaining appliances after correction, no matter how long the retaining appliances are worn.

But if the orthodontist cannot succeed alone in the treatment of mouth breathing, neither can the rhinologist do better by himself. The work of the orthodontist is just as necessary to complete the rhinologist's efforts, as the rhinologist is necessary to supplement the orthodontist's work. No amount of curetting or spraying will give complete relief in the narrow and hypertrophied nasal passages of the mouth breather. Removal of spurs of the inferior turbinates only partially remedies matters. What is needed is the intelligent co-operation of both rhinologist and orthodontist, with a better understanding by each of the others' work. Even then they can only succeed in full measure when treatment is given during youth, and Dame Nature, the greatest physician of them all, is simply helped to perform the real cure.

How futile, how utterly hopeless of good results is the treatment of the mouth breather after maturity is once reached. What waste of energy and how many the disappointments from attempting the impossible in this line. How many the failures, and what faith in both orthodontia and rhinology has been shattered, because Nature has been expected to set aside her laws, and perfection has been hoped for from man's crude efforts where only Nature herself could do the work.





Some Considerations Pertaining to Immediate Root Filling.

By OTTO E. INGLIS, D.D.S., Philadelphia, Pa.

Read before the New Jersey State Dental Society, July, 1903.

Immediate root filling I understand to mean the placing of a permanent root filling immediately after extirpation of a pulp prepared for removal by arsenic, pressure anæsthesia, cataphoresis or any analogous method, or immediately after opening up a root canal containing a gangrenous pulp, or remains of one, for the purpose of filling it. When a canal containing either sort of pulp is tentatively dressed with cotton after the extirpation, a later permanent filling cannot be considered as "immediate," though if tentative dressing be unavailing and canal or apical sepsis recur and permanent filling then effect a cure, I should regard the latter procedure as an entirely new departure from the method previously employed and legitimately to be regarded as "immediate filling."

Again the opening and sterilization of a root canal for purposes of abortion in cases of acute apical abscess does not bar a subsequent sterilization and filling from being called "immediate." It is quite possible to adopt a form of removable immediate permanent root filling which may be placed in prepared root canals with the intention of leaving it in place if no pathological condition supervene, while yet it may be removed for further treatment if such condition arise. The placing of a permanent cavity filling or of a temporary one immediately after the root filling is placed has nothing whatever to do with the operation known as immediate root filling, although the first procedure may of course indicate greater confidence in the method employed.

Immediate root filling as thus defined is not a new thing, but as it is in many cases a good procedure and of vital interest to us all, I take up its

consideration before you. At the October, 1902, meeting of the Philadelphia Academy of Stomatology, Dr. James G. Palmer of New York pleaded for conservatism in root canal treatment and favored a tentative root treatment particularly in septic cases and was supported by Dr. Louis Jack and others. Dr. F. Milton Smith of New York, however, took strongly the opposite ground and claimed that thorough sterilization of septic root canals and apical tissues allowed him to fill permanently all septic root canals at the first sitting. He excepted one condition, that of a canal from which he could not exclude moisture which would persistently enter by way of the apical foramen. The discussion upon these points was exceedingly interesting and valuable and may be found in the *International Dental Journal* for March, 1903.

My early education in root canal treatment together with perhaps a certain degree of over respect for my patients inclined me to the use of the tentative method, but after hearing the discussion referred to I resolved to conduct experiments of a clinical nature to determine for myself some of the points in connection with these cases.

In the college clinic I gave instructions to students to fill roots permanently and immediately after extirpation of the pulp by cocaine pressure anesthesia and after the use of arsenic, which method was then most commonly in use. There was almost absolute success when directions were followed and such teeth as gave discomfort were found to have done so as the result of imperfect manipulation of the root filling. In a few cases the roots were found only partly filled and proper filling produced the desired good results. For the most part in these cases cones rolled from temporary stopping were packed in sections into the canal which was moistened with eucalyptol.

The same results have been found in my own patients. In this class of cases I have used immediate filling for many years except where much apical irritation has resulted from broaching. I now, however, do not regard this as even a bar if forma-percha be used, of which I shall speak further on. In cases of aborted apical abscess, the teeth were left open after venting and root canal sterilization until such time as subsidence of the apical inflammation occurred.

By this time the canals were again infected and resterilization had to be resorted to. In some of these cases the tentative method was used and in others immediate filling was ordered employed as for uncomplicated gangrenous pulp.

In the cases of uncomplicated gangrenous pulp, the teeth were sometimes treated with the rubber dam in place and sometimes without it, as for ex-

**Method of Sterilizing
Root Canals.**



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ample in cases in which the dam could not be successfully employed to exclude saliva. In the latter cases the mouth was sterilized with a strong potassium permanganate solution. Next the teeth were opened with burs until access to canals was obtained. The cavity was flushed out, the patient requested to open the mouth and the excess of moisture removed from the bulb of the pulp cavity. Previously a little sodium dioxide in powdered form was placed on a glass mixing slab and a drop of water was also placed on the slab near it. A fine Donaldson cleanser was now drawn through the water then through the sodium dioxide and the adherent mass carried into the root canal and gently worked in for a short distance. The sodium dioxide reacted with the water and produced sodium hydrate and hydrogen dioxide which liberated nascent oxygen. When a portion of the canal was sterilized, a Moffet syringe was held in the left hand and while gently broaching with the right hand a stream of water was passed in. The combined action freed the canal of remnants of pulp, etc., as far as the broach was inserted. The mouth was now again evacuated, the cavity again dried and more sodium dioxide introduced and carried further in. If during the course of the sterilization saliva began to enter the cavity, it was removed by a douching from the syringe and work again resumed. No attempt was made to prevent a deep action of the sodium dioxide, in fact it was invited for the fine roots, yet not carried too far into the open foramen. If possible, the foramen was explored with the broach. This work was continued for possibly ten minutes with a fairly open root; the other cases required a longer time, and, if necessary, drills and sulphuric acid were used to enlarge the root canals.

The mechanical work and sterilization completed, the mouth was napkined to exclude moisture; the roots were dried with cotton twist on tempered Swiss broaches, thoroughly dried with hot air and filled permanently, or if desired, tentatively dressed. The permanent fillings experimented with were chloropercha on cotton twists, gutta percha cones in sections, the canal being moistened with eucalyptol, temporary stopping cones used in the same manner and in certain doubtful cases forma-percha on cotton.

In careful hands, good results were obtained and in my own practice I have enjoyed the satisfaction of having no particular trouble with the method, any resulting irritation usually passing away promptly and only occasionally iodine counter-irritation being required.

For about a year I have had pleasure in the use of forma-percha. This material was introduced by Dr. John C. Blair of Louisville, Ky., and he now states that it is composed of red base-plate gutta

percha, oil of eucalyptus, oil of cassia and paraform. As it comes for use it is in a stable, thick solution or semi-solid of friable nature. It may be taken upon a spatula and gently warmed over a flame into a thick creamy mass, which does not quickly return to the friable state. In this may be dipped a twist of cotton rolled on a fine Swiss broach, or other suitable cotton carrier, which is at once carried into the sterilized and dried canal. On the Swiss broach it is carried in with a twist to the right which screws the cotton into the canal. When placed, the broach is turned twice to the left which disengages the broach from the cotton fibres. It is withdrawn a sixteenth of an inch and the cotton crimped upon itself to pack it firmly into the root. This is repeated until the cotton is all firmly packed in. To do this successfully requires that the pointed end of the broach be cut off with scissors before rolling the cotton upon it. After this operation a cone of temporary stopping is placed into the surplus of forma-percha remaining at the mouth of the canal. Any further surplus of forma-percha is now to be removed from the bulb of the pulp chamber by wiping out with cotton; then oxychloride of zinc, stiffly mixed, is carried in on a ball burnisher or other packer, is distributed with it and then further compressed with a pellet of bibulous paper or cotton.

As a rule I have used a temporary filling of pink base-plate gutta percha as a test filling. I have tested the removability of this root filling and find it easy of accomplishment, so that in doubtful cases it may be regarded as a therapeutic dressing, or as a permanent filling according to subsequent indication.

Human skill is not equal to the task of successfully opening all fine roots to the apical foramen so that some such removable filling or tentative dressing must be employed in such cases. In the vast majority of even such canals, however, it will not require removal. It is not miscible with water and is therefore impervious to moisture; containing formaldehyde and essential oils, it is therapeutically antiseptic for a time at least and therefore displaces temporary antiseptics, and it is mechanically antiseptic. While it is not now possible to give it a twenty year reputation, it may be said that Blair has given cotton and forma-percha an eight year one. I feel that it deserves recommendation for the troublesome class of cases I have described.

The comparison of the tentative and immediate

Methods Compared. methods in the same case deserves some notice. I will mention a few typical cases. In a lower bicuspid with gangrenous pulp I opened under rubber dam, sterilized and dressed with cotton and an antiseptic. After two days the patient reported a slight soreness. I dressed again; still there was some tenderness and so on until I became disgusted. I then sterilized and filled the root perma-



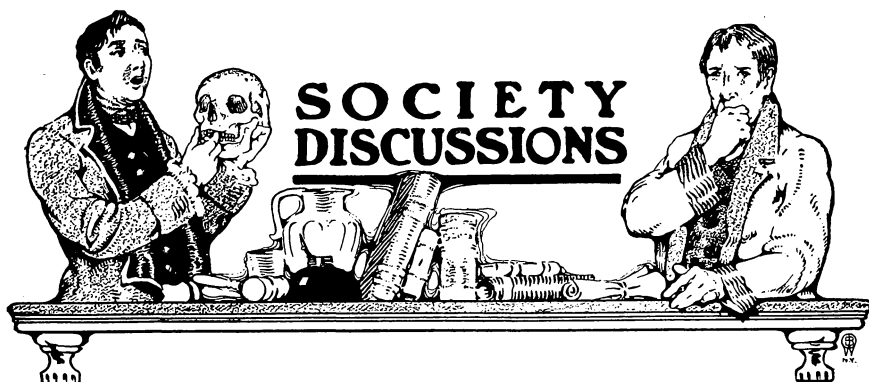
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nently and applied iodine to the gum. After a slight soreness the tooth became comfortable and so remains.

An upper central incisor with a history of apical pericementitis was sterilized with sodium dioxide and dressed with cotton and an antiseptic. In a few days it was opened and a free flow of pus followed the removal of the cotton. I again sterilized for about fifteen minutes with sodium dioxide, forcing it well into the apical space. After drying thoroughly, I moistened the canal with eucalyptus and filled with sections of a cone of temporary stopping. Iodine was then applied to the gum. This case was absolutely comfortable from date of filling and was under observation for two months after filling. It did not form a fistula nor show any sign of pericemental irritation. In that class of cases in which effusions continually escape from the apical tissue into the canal as is shown by the repeated moistening of the cotton swab, there is no doubt that from that point immediate work is of as great value as a tentative method. Deliquesced zinc chloride in very small quantity on the end of the cotton swab will as a rule promptly check the effusion, when the canal may be dried and filled. I know that this use of zinc chloride has been criticised, but I beg to report my own good results notwithstanding.

Immediate filling in cases of certain forms of apical abscess of semi-chronic or subacute nature seems good in my experience, but I am not prepared to advise its use in the violently acute cases. In cases of chronic abscess with fistula, it is good practice and at times seems to be the only method of effecting a cure though to be sure there are cases of septic cementum that are beyond a cure by this method. Aristo-paraffin, aristol and wax, and paraform and wax are other forms of removable root fillings and in the larger roots any of the forms of gutta percha are quite readily removable by means of drills; cotton and chloro-percha is the most difficult of them to remove.

The time saved by immediate root filling is enormous and in full practice it is a great comfort not to be compelled to sandwich patients into one's engaged hours for the purpose of treating teeth. The patients will come out of the proper time in spite of every precaution and the earning capacity of time is markedly lessened without a compensating remuneration from the treating. While no one would wilfully neglect the requirements of any case or treat immediately when circumstances indicate another course, this is a point of no mean importance. As stated by one of my confreres across the club sandwich, "One does a lot of little things in treating which tax his ingenuity and takes up his time and for which he does not get paid." He is a man who thinks well of himself and has a fine practice among well to do and discriminating patients so that I think my ground is fairly well taken.



Thirty-Third Annual Session of the New Jersey State Dental Society, Asbury Park, N. J., July 15, 16 and 17, 1903.

Wednesday, July 15, 1903—Morning Session.

President Hindle called the meeting to order.

The secretary called the roll and a quorum was found to be present. An eloquent prayer was offered by the Rev. Willard Congar, of Asbury Park, N. J.

The president then called Vice-President Sutphen to the chair, and read the annual address.

President's Address.

Members of the New Jersey State Dental Society:

Once more it is the pleasure of your president to welcome the members and guests of the New Jersey State Dental Society to its annual meeting. We now commence the thirty-third year of our existence as a society. Have we made the progress and the advancement expected of us after thirty-three years of life?

When we consider the increase in the attendance at our sessions from year to year and the high standard our programme has attained, together with the steady growth of our membership, this question is readily answered, I believe, with pride and satisfaction to all.

In glancing over the programme for this year, in which you can easily see the handiwork of our efficient Secretary, you must have been impressed by the work of the various committees.

Dr. Chase, of the Essay Committee, has presented to us an array of essayists of unusual prominence and ability. Also in our clinics Dr. Hawke has surpassed all previous efforts. The large number of clinicians





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speaks well for the work accomplished in this department. The exhibits are growing more numerous and the display more wonderful each year, so much so, in fact, that we can no longer consider them a small factor of our meeting; they are, indeed, a very important part of our convention. We have made very material advancement in this direction again this year, and as a result of the strenuous efforts of our vice-president, Dr. Sutphen, we are enabled to present to you the largest and greatest exhibit ever held under the auspices of this society.

Realizing the importance of the Registration Committee, it has been deemed best to make one of the members of the Executive Committee chairman of the Committee on Registration and thus bring this work under the supervision of the Executive Committee. Dr. Irwin has been selected to take charge of this important work and its success is consequently assured.

A new committee, known as the Building Loan Committee, has been appointed by the president in pursuance of a resolution passed by the Executive Committee at the mid-winter meeting. This committee is practically a Ways and Means Committee, I believe, to offer plans for a permanent home for our society, with suggestions as to the maintenance of the same. At the business meeting you will hear the report offered by this committee, and I hope the matter will be thoroughly discussed before any definite action is taken by the society.

It affords me great pleasure to announce to you that we meet together this year with unbroken ranks, and for this blessing we should all give our most grateful thanks.

Vacancy in the Examining Board.

We have lost, however, the valuable services of our friend and associate, Dr. J. Allen Osmun, who, owing to ill health, has found it necessary to lay aside the cares and worries of the profession he loved so well in order to seek health and strength in the far West. Dr. Osmun was one of the hard workers of this society, and his absence from our sessions will be most keenly felt. I am sure you will all join with me in wishing for him a speedy and permanent return to good health.

The departure of Dr. Osmun necessarily created a vacancy in the State Board of Registration and Examination in Dentistry, and although the president of the State Society has not heard, officially, of the resignation of Dr. Osmun or the appointment of his successor, still I believe I can inform you of the resignation of Dr. Osmun as a member of this Board and of the appointment, by the Governor, of Dr. Charles S. Stockton, of Newark, to fill the unexpired term.

It is the opinion of many of our members that the appointment of a successor to Dr. Osmun, without the knowledge of the society, was ex-

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tremely discourteous. But few knew of the resignation of Dr. Osmun until after his successor had been appointed.

Would it not have been better had a special meeting of the society been called in order that you might have had the privilege of recommending to the Governor your choice to fill the unexpired term?

While the appointment is undoubtedly legal, it, nevertheless, unfortunately places the appointee in the unenviable position of being the only member of the board ever appointed without the recommendation of this society.

I desire to have it thoroughly understood that I intend no personal reference to the newly appointed member of the board, but I wish to refer only to the discourtesy shown to the society.

I presume you have all read in the dental journals of the formation of a new society, known as **National Society Meetings.** "The Inter-State Dental Fraternity." It proposes to hold its meeting each year in conjunction with the National Association, having for its object the promotion of social and fraternal relations among its members.

The National Dental Association will hold its annual meeting this year in Asheville, N. C., on July 28, and I hope that as many of the members of this society as possible will attend, and thus have our State Society well represented.

The International Dental Congress, which is to be held at St. Louis in August, 1904, should have a large New Jersey representation, and while it is some time off, I believe that we should at this time inaugurate some movement with this object in view.

The decision of the Supreme Court, sustaining our dental law, is very gratifying to us indeed. You will no doubt receive full notice of this fact in the report of our State Board, which will be presented to you on Friday morning.

Although our membership remains unbroken, still we have lost a friend and legal adviser in the person of ex-Senator W. S. Leaming, of Cape May. Senator Leaming was an honorary member of our Legislative Committee and took a very active part and was of much assistance to us in the passing of our dental law.

As it is the prerogative of the president to offer you at this time any special suggestions that might have occurred to him during the year, I therefore avail myself of the privilege by presenting the following recommendations:

Recommendations. *First*—That the members of the Legislative Committee be appointed by the president for a term of years. As it is now, they are appointed in January



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and their terms expire in the following July, which fact seriously hampers the work of the committee. I would suggest, therefore, that the committee consist of one member from each county, seven to be appointed each year to serve for three years. The twenty-one counties, by this method, should be divided alphabetically into three sections, consisting of seven counties each. By this arrangement the majority of the committee would always be composed of men of experience in this work. In the appointment of the first committee, those of the first section would necessarily serve only for one year, and those of the second section for two years, while those of the third section would serve for the full term of three years.

Second.—May I emphasize the importance of the Legislative Committee passing a bill to exempt dentists from jury duty? This subject has been brought forward year after year, but nothing definite has been accomplished in this direction. I sincerely hope this will be undertaken during the coming session of the Legislature.

Third.—That an interchange of license be thoroughly considered by our board with the hope of establishing such a custom between the States, if the same can be accomplished with justice to all. I believe an arrangement by which a practitioner of, say five years continuous practice in one State, would be allowed to practice in another State, without being compelled to undergo an examination, would be fair and just.

In closing I wish most cordially to extend the privilege of the floor, during all discussions, to the members and guests, and sincerely hope you will avail yourselves of the same. I ask the members of the society for their support and assistance. With your co-operation I will endeavor to preside over all sessions and business meetings with fairness and justice.

Discussion of President's Address.

The Chairman.

You have all heard the address of the president and it is now open for discussion.

Dr. Stockton.

For two or three years I have led the discussion on the president's address because it seemed wise that the president's address should be discussed at this time rather than that it should be referred to a committee. One remark of the president about which I desire to speak is concerning my appointment on the Examining Board. The president says that it was extremely discourteous of the Governor to appoint a member on the Examining Board without a meeting of this society being called to nominate such a member, but if I understand the law correctly, such remarks from the president of this society are entirely out of the order. It was exclusively the privilege and the province of the Governor of the State of New Jersey

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to appoint a member of the Board of Examiners when a vacancy occurred, and it would have been an extremely discourteous thing for this society, under the circumstances which existed, to have called a meeting to suggest an appointee to the Governor. So far as the appointee was concerned, it was only through the persistent solicitation of several members of the society that he consented to serve, and from the very short experience he has already had he desires most emphatically to say that a man who takes a position on an Examining Board is a fool.

The president has referred to the interchange of licenses between the States; we are all looking forward to the time when such an interchange may be, but there are great difficulties about it.

There has come into my mind a scheme something like this: A dentist desiring to go to another State to practice dentistry should come before the Board of Examiners in his own State, state the fact that he is about to go elsewhere and give his reasons for it. He then, if properly entitled thereto, will receive a certificate showing that he is a reputable man who has practiced his profession in his own State for a certain number of years; this certificate he can take to the State to which he is about to go and present it to the Board of Examiners there, and thus receive a license to practice in that State. It is a great injustice to require a practicing dentist to submit to the same examination before the State Board that an applicant for a license fresh from the college receives. The board in the State into which the dentist moves might ask him a few questions, but he should not be required to go through a critical examination.

The president's address has been quite pleasing
Dr. Adams. to me and I am very glad that I had the privilege of listening to it. One part of it seems to have been antagonistic to the new appointee on the board, but I am sure it was not written by the president for that purpose.

Once since my acquaintance with the board an occasion of this kind arose after the death of Dr. Levy, and a committee of the society was then called and Dr. Meeker was chosen for recommendation to the Governor.

Dr. Meeker. The law was different then; it has been changed since.

Dr. Adams. We did not know that the law in that particular respect had been changed.

Dr. Meeker. Yes, it has been changed.

In regard to the suggestion that the Legislative Committee be appointed at the annual meeting, I look upon it with favor, and it should be done.

Dr. Adams. With reference to Dr. Adams's remark concerning the appointment of a successor to Dr. Levy, I



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would say that the Board met at Elizabeth some time thereafter with the purpose of formulating a new law, and I objected very strenuously at the time to changing the law so as to give the Governor the power to fill vacancies caused by death without the recommendation of the State Society, but the gentlemen who drew the law stated that it was within the province of the Governor and it would be a proper thing to adopt. I still think it was wrong.

I, with the rest of you, listened with pleasure to the president's address and the suggestions made in it concerning a permanent home. That is something that has been in my mind for a number of years. Last year I had considerable trouble in securing this auditorium for the present year. The block was for sale by Mr. Bradley, and you all know that he sold the beach front. If we could not get this place I do not know of any place on the Atlantic coast where we could hold our meeting. Each year our meetings are growing in importance. Our exhibits now exceed those of the National Association at Niagara Falls.

A resolution was presented by me to the Executive Committee in January to appoint a committee of ten concerning the question of our owning a building, and the committee as appointed by the president then will give the matter attention; I believe that the subject can be handled in such a way as to make a great success of it.

The suggestion concerning the Legislative Committee is an important one. It is necessary that such a committee should be in harness all the time, and if fourteen men are on such a committee we will constantly be in a condition to give any attention to legislation that may be required.

The question of the interchange of license is a serious one, but I will speak of that later in the report of the Examining Board.

I do not feel that I can allow this discussion to
Dr. Cruax. be brought to a close without saying something, principally because I am responsible for some portion of the address, although I am as much surprised this morning as any one. Some time ago I received a letter from Dr. Hindle asking me if I had any suggestions to offer and also asking me a few questions, one being, "What do you think of the appointment of Dr. Stockton on the board?" I replied that while I believed it might be strictly in accordance with the letter of the law, it violated the spirit of the law. Personally, I am very much pleased to work with Dr. Stockton on the board, and it has been a pleasure to me to have him appointed, but I am still convinced that the same methods pursued in the future might be harmful, and I still believe that such action was a discourtesy to the society. I enjoyed listening to the president's address very much, and it gave me great satisfaction to hear an address so pointed, so full of truth, so honest and so frank. Many

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times the president's address is too smooth and really has nothing to it. In addition to the president's suggestions, I believe there is ample room for work to be done upon the law of the State.

I wish to refer first to the remarks made by Dr. **Hindle.** Stockton, for I believe the doctor has been innocently mistaken in the play upon words which he made in the opening of his discussion.

The gentleman stated that I said in my address that discourtesy had been shown to the society in respect *to* the member who was appointed. I wish to say to Dr. Stockton that the language of my address is that the discourtesy was shown in as much as *a* member was appointed, and I tried to explain in my address that I meant nothing personal at all to the appointee. The gentleman in his remarks speaks of the discourtesy that would have been shown to the Governor had this society made a recommendation for a man to be appointed to fill the unexpired term of Dr. Osmun.

Dr. Stockton complimented me on my wisdom and shrewdness, etc., and I wish to thank him in the same way, but I must say that I believe the statement that it would have been a discourtesy for the society to have made such recommendations is the most ridiculous statement I ever heard from Dr. Stockton's lips, for it seems to me absurd to suppose that the Governor of this State would consider a discourtesy had been shown him simply because we, as a society, took such action. On the other hand, I believe the Governor would have thanked us and would have felt pleased and honored by such a recommendation, and I still think that no blunder has been made by me in the comments that I made. I consider it not only my right but my duty as president to look after the welfare of the society and its surroundings during the year. We all know and recognize the fact that the members of the Examining Board are State officers, but we also know that the members of the board are the selections of this society.

Such action as that taken this morning will not tend to make matters smooth nor is it in the interest of harmony, and fuel is added to the fire. If the board wishes to be successful, it must have the moral support of this society, and such action as that which has been taken does not, it seems to me, tend towards such a condition.

Nor is this my opinion alone, but it is that of many members of this society. That fact has been brought to my attention by many of the members; and, as I said before, I believe it to be my duty to bring the matter forward, and that is the only reason I did so. I have no personal reason whatever, nor have I the slightest objection individually to the appointment made by the Governor, and I wish to have that thoroughly understood.

I should like to make matters clear in regard to what Dr. Truax



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has just said. I do not wish to have the idea prevail that Dr. Truax or Doctor anybody else had anything to do with the president's address, but as a matter of courtesy I wrote Dr. Truax as president of the board, as I did Dr. Meeker as secretary of the board, asking them, as officials, whether they had any recommendations or suggestions to make which the president might embody in his annual address.

I thank you gentlemen for what has been said concerning the president's address, and I hope that before I resume the chair a motion will be made looking toward some action by the society on the recommendations that have been made, particularly that concerning the Legislative Committee.

I move that a committee of three be appointed to
Dr. Meeker. consider the president's address and the suggestions therein contained.

The above motion was carried and the following committee was appointed: Drs. Meeker, Irwin and Hawke.

The following propositions for membership were received and on motion took the usual course:

P. Judsen Eckel, Washington, N. J. Sponsors, Drs. Hawke and Meeker.

Byran L. Rhome, Asbury Park, N. J. Sponsors, Drs. Taylor and Tompkins.

Wallace T. Mailan, Somerville, N. J. Sponsors, Drs. Meeker and Hindle.

W. H. Ownes, Trenton, N. J. Sponsors, Drs. Dilts and Hawke.

A. Percy Roberts, Elizabeth, N. J. Sponsors, Drs. Woolsey and Dunning.

The secretary then read a communication from the New York State Dental Society in reference to the Carnegie Institute at Washington.

On motion the above communication was received and it was resolved that a committee be appointed pursuant to the request of the application.

Secretary Meeker stated that at the last annual meeting it was proposed to give a dinner to Mr. Bradley in recognition of his kindness extended to this society for so many years, and that he had written to Mr. Bradley on the subject and received a reply, which Dr. Meeker read, thanking the society for the attention and stating that Mr. Bradley was compelled to decline.

On motion the above communication from Mr. Bradley was received and placed on file.

On motion adjourned until 8 p. m.

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Evening Session.

President Hindle called the meeting to order. The secretary called the roll and a quorum was found to be present.

The following applications for membership were received, and on motion took the usual course:

Louis J. Fishbein, Newark, N. J. Sponsors, Drs. Dunning and Meeker.

John A. Voorhees, Newark, N. J. Sponsors, Drs. Adams, Riley and Dunning.

D. B. Scofield, Jersey City, N. J., Sponsors, Drs. Dunning and Halsey.

R. B. Van Geisen, Montclair, N. J. Sponsors, Drs. Gould and Dunning.

William R. Robbins, Madison, N. J. Sponsors, Drs. Dunning and Hoblitzell.

Charles B. Roberts, Jersey City, N. J. Sponsors, Drs. Harlan and Gould.

The president then introduced Dr. Otto L. Inglis, who read a paper entitled "Some Considerations Pertaining to Immediate Root Filling."

Discussion of Dr. Inglis's Paper.

The subject which Dr. Inglis has presented to us **Dr. Alphonso Irwin, Camden, N. J.** this evening is intensely interesting to the dentist. I congratulate the essayist upon presenting a subject which is practical and of everyday use and which is adjusted to the understanding of every man in this room. Usually an essayist selects some marvelous achievement which has been performed and expatiates on some glittering success which has occurred in his practice, which we often do not appreciate. But Dr. Inglis is a practical dentist who has ample means of corroborating his statements, and therefore what he says bears weight. I also congratulate the society upon the fact that it has a subject now open for discussion about which every member can say something.

I have attempted to make an analysis of Dr. Inglis's paper, and it seems to me he has called to your attention two methods of treatment; the first is immediate root filling in contradistinction to the second, or tentative method. It has been my practice to pursue the tentative method, and yet from what I have heard this evening I feel I must try the method presented by Dr. Inglis.

One of the main points brought out is the desirability of immediate root filling. This is largely to be considered in reference to the time limit of the patient and the time limit of the operator. Another consideration



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which has been emphasized by Dr. Inglis is to devitalize the pulp either by the use of arsenic, cocaine or the use of electricity, and I can agree with him in the desirability of immediate root filling, provided such filling is removable.

Another point is that of instrumentation. We all know what an important feature in the treatment of nerve canals that is. The touch is one thing above all others which we have to cultivate, and the positive knowledge that we have removed from the root canal every possible particle of matter is a prerequisite to success in the treatment of root canals.

Another portion of his paper is properly placed under the head of sterilization, and he has suggested as his favorite germicide, eucalyptus, the essential oils and formaldehyde. He has also met with success in the use of deliquesced oxide of zinc, and also dilute chloride of zinc. In his statements in regard to this germicide or disinfectant I fully agree. There has also been brought to your attention the liability of infection. There are several sources of infection; there is the local source, the external source, the internal source and another source to which I will refer as the infernal source. I have never met with the latter classification in any text-books nor heard any dentists speak particularly upon that point, but it is one on which we feel very keenly.

In conclusion, I think the whole secret of success in practicing immediate root filling, with a removable root filling, lies in the fact that the root canal is absolutely and perfectly cleansed from the apex to the pulp chamber and that the canal is sterilized from the apex to the pulp chamber, and that the canal is filled solidly with a permanent filling from the apex to the orifice of the cavity. Some men will say, "If you plug up the foramen the teeth will be all right; there will be no apical infection." They will drive that truth home, and that seems to be, in their minds, the only essential to every operation and the work is secondary. Another man will assert that the source of infection can be from the dental tubuli and that septic matter will enter the canal and cause trouble.

As I have already stated, the secret of success in root filling, and in immediate root filling in my judgment, is the absolute and perfect removal of all debris, the perfect sterilization of the canal and the perfect filling of the canal from the apex to the floor of the cavity.

There is but little left to be said but many things
Dr. John Curry, to be done in the matter of successfully carrying to
Philadelphia, Pa. completion the directions which Dr. Inglis has given
us tonight. I accept the essayist's definition of what
he calls "immediate root filling;" I consider his methods conservative and
subscribe to them. If I make a mental reservation, I do not think it will
be any more than the Doctor himself has done, nor any more than most

of you will do. The matter of immediate root filling, as the gentleman who preceded me has said, is a subject which concerns dentists vitally, and I think I may be permitted to add that it concerns the patient vitally. The patient who comes perhaps three times a week for five or six weeks, or even, as they do in some cases, five or six months, to have a root canal treated, certainly ought to have something to say on this subject. Unfortunately they are not here, but we are their proxies.

As Dr. Irwin said, one of the important features of success in this method is complete sterilization, and when we speak of that we mean as complete as we can obtain. I do not think any dentist is ever absolutely positive in his own mind that he has fully and completely sterilized a root, even when he hopes that he has. In the majority of cases, however, sterilization can be carried forward so successfully and thoroughly that we can safely stop. Suppose we should have some apical irritation, local applications to the gum or counter irritation will remove it. If we have an abscess which has been discharging through the root or a blind abscess and we have succeeded in getting our root dry, that is the time to fill the root. If no inflammatory symptoms supervene, it is a very quick and ordinarily a painless operation to perforate the alveolar process and so relieve the distress. Of course, you do not tell the patient exactly what you are doing, for that might terrorize him a little if he knew you were going to drill through the bone. I never go into details until after the operation is over.

The matter of time is, in my mind, one of the most important considerations concerning this method. Unfortunately the American dentist is not like the Spanish practitioner. We have no "*Mannana*," we are working every day in the eternal "now," and are doing as much in one day for our patients and ourselves as we can. While the rubber dam is over the tooth and the patient in the chair, it does not take very much longer to make a thorough operation than it would to clean out the canal a little, put in some cotton and tell the patient to come again the next day. We all know that the receiving and dismissing of patients are great time consumers.

So, from the standpoint of surgical asepsis, and from almost any other standpoint from which one can view the subject, I would subscribe to the method which the essayist has so clearly and concisely set forth.

There were some points the essayist made that
Dr. Joseph Head. seemed to be especially valuable, particularly that
Advantages of which had to do with the cocainization of the nerve
Pressure Anaesthesia. by pressure. This method, and the resultant immediate filling of the root canal, is extremely happy inasmuch as, if the nerve is free from septic poison and asepsis is observed



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with the instruments, according to the laws of modern aseptic surgery, there ought to be absolutely no reason why such a tooth should give trouble any more than that trouble should arise in any of the ordinary abdominal operations where proper aseptic care has been used. It is one of the few operations in dentistry in which we feel that absolute asepsis can be obtained. But there is a special advantage in this method in destroying the pulp in molar teeth, by pressure with cocaine, that perhaps has not been brought out. If, for instance, we make entrance into the pulp of a molar and make pressure with cocaine, and presumably get out all the pulp that is there, we can on the following day have an absolutely certain guide as to whether we have taken out all of the pulp or not. As we know, the pulps in molars have two, three or more branches, according to the structure of the tooth, and it is occasionally extremely difficult to tell by working with a drill and by observation, whether all of these canals have been discovered, but if cocaine has been used and the pulp found and removed, on the following day the effect of the cocaine will have passed off. Then if pressure no longer gives pain, we may be sure that all of the pulp canals have been found, and the nerve filaments in these canals extirpated; but if on examination and pressure we find the same sharp thrill that would be given if the nerve filaments were there, we may be quite certain that some of the pulp is left, which can then be traced and eradicated. This seems to me to be an essentially valuable point and one which in my opinion gives extirpation by cocaine pressure, a certain precedent over the old arsenic method.

Dr. Inglis also spoke of the use of chloride of zinc. That appealed to me very strongly. In some cases of blind abscesses, where there is a cavity in the jaw at the tip of the root, it is next to impossible to create an antiseptic condition. If it happens to be in a tooth where the tip can be easily reached through the alveolar process, unquestionably the surgical procedure of drilling through the alveolar plate is the best way, as it can be opened and thoroughly cleansed and the filling inserted at once. But we all know that it is rather difficult to reach the tip of the lower twelfth year molar, or wisdom tooth, or even the lower sixth year molar, and while of course the surgical method is feasible with the upper teeth, where the external plate is thin, with the lower molars we have to resort to other means to destroy and get rid of the infested cavities which are the prime causes of blind abscesses. In my opinion the best means of destroying these is to inject through the apical foramen a small portion of deliquescent chloride of zinc. It will create a very severe pain for the time being, but it will cause granulations to fill the cavity. It is true that when you do it you had better select a patient who is weaker than yourself or else get into a fireproof safe and stay there for the next twenty-four



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hours. (Laughter.) But at the end of that time the patient will come and call you blessed because the tooth will have been saved which might otherwise have required extraction.

Dr. Ridgeway. I would like to ask the essayist if he has ever used oxyphosphate after the pulp has been taken out, working it into the canal.

Dr. Inglis. I will first take up the discussion of Dr. Irwin and I wish to thank him for his very flattering preliminary remarks. With regard to the time limit I

would like to say that my idea was not altogether the saving of time. In many cases the treatment of putrescent root canals by means of the tentative method seems to result in a worse condition than it was in even at first. Not infrequently after treating the canal tentatively, I have found pus coming from the apical tissue. Perhaps in those cases I had not carried the original sterilization as far as I would have done had I intended immediate root filling. It may be that the upper or apical portion of the canal still contained some septic matter, and that when the antiseptic, such as the oil of cassia or the oil of cloves or any other antiseptic of that nature, or even some of the aqueous antiseptics, were placed in position, a thorough sterilization was not effected. The time limit of course is a valuable consideration and we can save hours of time in using such a material as forma-percha. If that material is an antiseptic, and if you can thoroughly sterilize the root canal and then place that material as a temporary antiseptic or as a permanent one, just as the case may turn out, you are no worse off than if you had used a tentative filling. In such cases you have at the second filling to fill the canal with a permanent filling and why not place that permanent filling at once, for even if it is not successful, you only have to repeat it?

Another point is the safety of removable fillings and under very many circumstances I think that it can be said that on the whole the removable filling is perhaps better than the permanent one.

Sometimes teeth will be comfortable for an indefinite time under very bad treatment. I removed the other day a very handsome plastic filling which had been in position for some twenty years, the work having been done by a gentleman who was formerly one of the best operators in Philadelphia. The pulp had been almost removed but some had been left in one of the roots, while the other roots had been filled and no trouble was felt during all those twenty years, although there was a dead pulp in position all that time, and I know it must have been treated at that time for the cotton dressings were in position in the root.

I am perfectly in agreement with Dr. Irwin concerning the importance of the removal of the entire pulp. Why leave anything in the canal



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to become putrescent and give you trouble in the future? If you can get it out it is your duty to do so, and if you cannot, then you have done the best you can. I firmly believe if a man will do the best he can mechanically and then place a good antiseptic filling in the canal, he has done as much as any one can and has done thorough work whether he perfectly fills to the apex or not and in nine-tenths of the treatment of such roots a perfect filling to the apex is a lost art, or it never existed!

There may be some cases in which it is impossible to attempt an immediate root filling; there are some cases in which you cannot stop the flow of pus at the first sitting, and it would not be warranted to place anything in the nature of a permanent filling at that time. It is better to use methods that will drain the tissue or you will need to resort to the method of going through alveolar process and forcing the medicament through the canal.

In regard to Dr. Head's remarks upon the cocaine pressure anesthesia, it is not my desire to have it considered in that way. That was a little apart from the subject of the paper. But the idea that Dr. Head brought out is a very good one, that by waiting until the second day one could obtain a knowledge of the presence of the vital pulp in the canal. Certainly that should be ascertained if there be any doubt. It is possible though, in making pressure the second time, one would necessarily have to place the usual material in the canal and then, by making pressure, if a large apical foramen happened to be present I do not think he could possibly tell if a portion of the vital pulp existed, because very tender apical tissues—a very sensitive or irritated tissue—would be just as likely to respond, as a portion of the pulp. In fact only recently I had to remove a forma-percha filling owing to the fact that I had made pressure on the apical tissues when I placed the filling in the root. It is a very plastic material and squeezes into all the interstices and there is no reason why too much pressure should not force a portion of the material through into the apical space. You are all aware that pressure upon the apical tissues is apt to result in traumatic pericementitis and in this particular case I noticed the patient winced a little when I made the pressure, but I determined to take the risk, and the next day I had to remove the filling. I am satisfied in that case it was entirely due to the pressure; for as I say, I noticed response to the pressure by the patient at the time of the filling.

Regarding the point of leaving nerve filament in the canal it is of value to remember Dr. Bogue's case which he presented some years ago, I think to the New York Odontological Society, at any rate at one of the New York meetings. He spoke of a case in which cataphoresis had been used in the removing of the pulp for a right molar and nearly all of the pulp was removed from some of the canals and a large portion from the

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others. Immediately after the removal of the pulp the case developed neuralgic symptoms and I believe the lady underwent an operation which involved the antrum and there was a good deal of medical treatment indulged in with no success. Finally the dentist opened one root of that molar and discovered the pulp was still vital. So it is important to remember in cocaine pressure treatment that vital pulps might remain in the roots which may cause neuralgic conditions.

My conception of the use of chloride of zinc was slightly different from that mentioned by Dr. Head, although I believe that chloride of zinc, in a more mild solution than the deliquesced, could be forced into a blind abscess, but I would not urge the use of deliquesced chloride of zinc in those cases, that is, forcing any quantity of it into the apical space. My suggestion was that in some cases where the apical tissue constantly exhibited serum and there appeared to be a chronic inflammation present, with the tissues relaxed and a constant escape of the serum or blood in the canal, to use the cotton repeatedly, constantly forcing swabs of it in the root and taking them out again at once saturated with the serum, thus showing that the serum has rushed into the canal immediately upon the withdrawal of the cotton; the use of chloride of zinc in such cases is intended as an astringent. It usually acts like magic in those cases, but on some occasions has failed.

I think Dr. Irwin brought out the point that I preferred oil of eucalyptus and formaldehyde as a germicide. I did not intend to say that; the germicide I mentioned in preference was sodium-dioxide, which is a most marvelous agent. Pyrozone, 25 per cent, is also valuable.

Concerning the use of oxyphosphate I see no reason why it should be used as a permanent material when you have so good a material as oxychloride of zinc, which remains plastic for a greater length of time and which makes a permanent root filling which most operators seem to think the very best. In addition to that the oxychloride of zinc is much more easily managed in a root canal and you can pack it by swabs of cotton far better than you can oxyphosphate.





Interstate Dental Fraternity.

The first annual meeting of the Interstate Dental Fraternity was held at Battery Park Hotel, Asheville, N. C., on Tuesday evening, July 28, 1903.

Dr. Charles S. Stockton was elected Chairman and called the meeting to order.

Dr. R. M. Sanger. As there has never been a meeting of the entire body before it will be impossible for me to give you the minutes of the "previous meeting." (Laughter.)

The only business that you will have tonight will be to elect Vice-Presidents for the different States and a Secretary and a Treasurer for the association.

The following Vice-Presidents were then elected: Charles S. Stockton, New Jersey; F. C. Walker, New York; Hart J. Goslee, Illinois; Burton Lee Thorpe, Missouri; Emory A. Bryant, District of Columbia; Dennis F. Keefe, Providence, Rhode Island; Henry Barnes, Cleveland, Ohio; B. Holly Smith, Maryland; John F. Dowsley, Massachusetts; G. A. Esterley, Lawrence, Kansas; C. Richardson, Fayetteville, Arkansas; Frank E. Moody, Minneapolis, Minnesota; James McManus, Connecticut; J. A. Gorman, North Carolina; H. L. Banzhaf, Milwaukee, Wisconsin; J. N. Broomell, Pennsylvania; Edward Kells, Louisiana; George Edwin Hunt, Indianapolis, Indiana; Harry P. Carlton, San Francisco, California.

The fraternity then proceeded to the election of a Secretary and a Treasurer, the result being as follows:

Secretary, R. M. Sanger, East Orange, N. J.

Treasurer, Charles A. Meeker, Newark, N. J., and Alexander Grant, Newark Counsel.

The Secretary.

I believe that is all there is of a "painful nature."

Dr. R. Ottolengui.

Not at all! The most painful thing is yet to come! I am asked by the Treasurer to announce that he is in a receptive mode and will accept the annual dues from all those that wish to go home lighter in pocket.

The Coastmaster

Dr. C. S. Stockton.

Gentlemen and Members of the Interstate Dental Fraternity: I am delighted that the first meeting of this society is held on Southern soil and that we gather together 'neath Southern skies. (Applause.)

As I stood out on the balcony this evening I saw the new moon shining over my right shoulder and it seemed to me its beams were a little more gentle than sometimes they be and that this was an emblem of luck to our



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Fraternity. Here the sun shines warmer than in the North, and I know that in the South friendship, too, is warmer. (Applause.)

I happened to be present at the birth of this child and I had no idea it would grow so rapidly. It would not stay in its swaddling clothes, but very soon kicked itself loose; long dresses it would not tolerate, it wanted to get into trousers at once, and, gentlemen, if you will look under the table you will find that nearly every member has a tuck in his trousers, which he expects soon to let out! (Laughter.)

I believe "The Fraternity" is a good name; it means a good deal. That which we are all striving for is happiness: that is the great end and aim of all our efforts whether we think it may consist in hoarding money, in making a name or in "lifting the cup."

Other societies, local and national, afford an avenue for the output of scientific and technical subjects, and it was thought that we needed an organization which would bring us closer to one another, that would bind our hearts, like steel, together; for we want more than money, more than fame, we want happiness in our lives. (Applause.)

There is a legend of a man well advanced in years who heard that the Temple of Happiness was located on a mountain peak many, many miles away. He consumed long years and spent a fortune in reaching that spot, but on arriving there found not the Temple of Happiness, but a humble hut and, on his knocking at the door an old hermit came forth and on being asked for the Temple of Happiness, said: "The Temple of Happiness is not upon this mountain peak, you have been wrongly directed. The Temple of Happiness is in the valley from whence you came, it is there, in the hearts of your fellowmen." (Applause.) So the Interstate Dental Fraternity recognized the fact that if its members wanted happiness they should seek it in your hearts, and in mine. (Renewed Applause.)

On another occasion a man started forth in search of The Most Beautiful. He traveled the world over and at Paris, in passing through the Louvre, beheld that matchless statue, the Venus De Milo; he prostrated himself before it and offered his heart; but she bade him rise and said: "Do you not see that I cannot be your bride; I have no feet to travel on your errands of mercy, no arms to entwine about your neck and make you happy." But, gentlemen, we have arms with which to press each other heart to heart, and feet to travel on errands of mercy when needed. We are happy here tonight, but there are times coming to every one of you when you will need a friend, and if you have one, you possess the grandest gift that God can give; grasp that friend and hold him tightly, for you will some day need him.

I am in somewhat of a quandary as to who to call on first, but the



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room is somewhat warm tonight, and while we do not wish for a cyclone we could certainly stand a "Zephyr from the calm and peaceful West" and I know of no one who can more appropriately respond to that toast than Dr. Don Gallie, of Chicago. (Loud applause.)

Mr. Toastmaster: I cannot at this time attempt to respond to the toast, "A Zephyr from the Calm and Peaceful West." Dr. Stockton showed me the programme and the first toast upon it was to be by "The Gashouse of Kansas," so I will give place to my friend from that State.

In all justice to Dr. Root I should say that a few minutes ago he told me he would like to be excused for a moment or two.

However, a gentleman who rose from a sick bed to come to this meeting will introduce Dr. Root. When this gentleman entered the room you all called him "Jack," so I will merely say to you that "Jack" will introduce Dr. Root.

Dr. Root has several times expressed the desire that I should introduce him. I do not know just why he should have made that request, unless it be that, being an intimate friend of his, I have been forced so often to listen to the sad story of his life and therefore am, perhaps, as well fitted as anyone else for the ordeal.

Dr. Root has some very sensitive points in his makeup, and one arises from the fact that he is frequently introduced as "The Root of all Evil," but I particularly desire to disabuse your mind of any such idea; he is not that root, for you know that money is "The Root of all Evil," and I know that he hasn't any money, for no one ever saw him "buy." (Laughter.) Dr. Root has the reputation of being a funny man; well, he is—but he does not look it;—he simply looks queer. (Laughter.) He also has the reputation of being a nervy man. That is true only of his dealings with those that love him and with friendly acquaintances who know him but slightly, but as almost invariably he begins his speech with an apology, I believe he is a good deal of a coward.

Be that as it may, for my sake, if not for his, I beg of you to give him a quiet, thoughtful hearing, for, whatever he may do, he will do the best he can. (Applause.) And, strange to say, he thinks he is doing his best when he is doing others. You know Talleyrand defined a diplomat as a man who could talk and write without saying anything—the gentleman I am introducing has frequently demonstrated that he is eminently qualified in this capacity, and indeed I know of no better man than Jay Pay Root of Kansas to represent that State of corn and wind (he is always

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windy and acts as if he were "corned") to give you a demonstration in diplomacy.

Gentlemen, Jay Pay!

Our friend Jack told the truth; I intended to apologize tonight for my shortcomings, but as "An apology" has opened for me, it will be unnecessary (Laughter.) You know our friend Jack has been sick, he looks it; he acts it. We sympathize with and for him; we have taken care of him in his illness, hired nurses to administer nourishment, guards to restrain him from violence in his ravings and keep the snakes from biting his person. Gentlemen, I am happy to make the announcement that Jack has reformed, and from now on will not indulge in that which "biteth like an adder and stingeth like a serpent." That is, he will not partake at his own expense. I am sick myself tonight. I have been in this high altitude for a week; have danced with the ladies; have had palpitation of the heart; have had mint julep; have had indigestion; in fact I have had most everything. Would have indulged in a bath if this hotel was burdened with bathrooms, but the lack of baths has been a comfort, for my friend Holly Smith insists on my taking hourly trips down the hall; he says, "Now, Root, sah; come now sah, and have a wash with me, sah! Frank, you d—ned rascal sah; come join the Doctah," and Frank never refused, even if he did bring his wife to Asheville; and, gentlemen, I can assure you that the goods in room 52, wash all the way down and never leave a sting.

I appreciate the compliment of being asked to speak tonight, appreciate the glory of being here in the South. This is my first trip here since 1862, when a few of us came down South, not because we wanted to, but because we were drafted. I have wondered when sitting on the veranda, what idea God had when he made these surrounding hills; I have asked the natives. They did not seem to know, said the hills were here when they came. This morning I discovered the reason. I was sitting with our Chicago Whirlwind and he, desiring to tell me a story, said: "Come closer, Root, I have a new one and will whisper to you." He did, and I could see on the mountain tops away off, the voice of Don Gallie, jumping from peak to peak, bounding over Mt. Pisgah into interminable space, or Tennessee. Gentlemen, those hills were put there to keep his voice from coming back.

We have had numerous attractions here to make us forget lack of baths and charge of twenty-five cents for whiskey. We have the ostrich farm, the men all go at six a. m. and wish they were home.

At nine a. m. we mozey to entrance to see Nyman, Goslee and other acrobats return from their morning ride, wagering good money as to



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whether Nyman has bounced from his horse on to Goslee's or Carlton's; you can safely bet he never returns on the horse he left on. Then for a quiet amusing time, we go to the bulletin board and add up the number of offices Meeker has refused, he refuses so many. Has formed the habit. Occasionally I receive a little semi-weekly paper published in a suburb of New York (village of Newark, I believe); on the front page in great big head lines is the announcement, "Meeker refuses another office! P. S. He changes his mind at the last moment." When we are exceedingly bored and desire a real exciting time, we can take a back seat in the ball room and listen to the proceedings of the Association of Faculties; they are not only exciting, they amuse.

I should like to make a long heart to heart talk to you tonight, but am sick, really sick and it always pains one of us (they call us "mouth breathers" out in Kansas) when anything happens which bars us from talking, but as I have spent three days talking to Examining Boards (that is when Meeker wasn't), and expected to talk three days more before Section II trying to get my paper admitted, I am completely worn out and shall leave the rest of the night for Gallie.

I am going to change the order of the toasts just a little. The gentleman who will next be called upon to respond is one who has done a great deal for this Fraternity. He performed a most remarkable feat, he wrote the constitution, and it was adopted without a single change; that is something I have never seen done before. His toast is "Joys of an Editor." So far as my own predictions are concerned, I have found, however, that they take great joy in publishing the things which are poor and leaving out those which are good!

The Toastmaster has revealed the fact that I had the temerity to write the constitution of this Fraternity. Now anyone who undertakes a task of that kind may surely be said to be stricken with madness, yet there was some method in my madness. You will observe (that is those of you who can still see, will observe) that there is no provision for a president. Let me frankly confess that I have been attending dental meetings for nearly a quarter of a century waiting for a unanimous election to the presidency of some Society, but without success. Apparently I have been inoculated with some serum against "presidentitis," and it has "taken." I am immune. Feeling therefore that under no possible sequence of events could I ever hope to be made the president of this Fraternity, and with the opportunity of framing the constitution all in my own hands (there were others on the committee, but as usual I did all the talking) it seemed to me utterly superfluous to have any such office. The scheme of numerous



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Vice-Presidents was introduced to prevent any scrambling for office, and you have noticed the absence of scramble tonight and have observed that there was about only one nomination on every deal, which proves that the gentlemen who were nominated, had absolutely nothing to do with their nominations. The nominations were all made by the Secretary and closed before anybody else had a chance to say anything, and I assure you that is the way to get rid of politics. In politics, if you have two men up for election, there is always a lot of lobbying, but by the simple method that we have pursued, all trouble is avoided.

It has just occurred to my mind that when I was introduced I was asked to speak on the "Joys of an Editor," and that I have not touched upon that theme. We once had a real dental editor, but he had one great trouble in editing his journal. It is necessary in order to make a success of a journal to have two things, money and brains. Hunt did not have the money so his journal died. I have heard it whispered around that the various journals that have endeavored to publish the proceedings of the National Dental Association have done it in such an unsatisfactory manner that there is a movement on foot to start a journal of the organization, a journal of the National Dental Association, and the only quandary the council is in, is to find a proper editor. I took counsel with Dr. Hunt today, and I asked him if he would suggest a good editor for the leading dental journal of the world, as it should be if it were the journal of that organization, and without a moment's hesitation, he said, "If you nominate me I will accept."

Now I move, in case a national journal is started, that this Fraternity show its power by insisting that George Edwin Hunt, the brainy man from Indianapolis, shall sever his connection with the body of which he is now a part, and devote the rest of his life in showing how to edit a dental journal.

I have heard the altitude of this locality complained of tonight, and I have heard the stories about the amount of "washing" that certain gentlemen have done. The question is, What were they washing with? (Laughter.) I heard it stated lately that different countries are celebrated for the different quantities of liquid they use. Germany uses more beer than any other country in the world; France consumes more wine, while America has the distinguished honor of using the largest quantity of water—on the side. (Laughter.)

I desire to explain the absolute lack of continuity point and pith in my remarks. You will remember that Dr. Don Gallie was called on to speak first, but you will recall that he got up and insisted on waiting his turn as printed on the programme. I will tell you the truth about that. Dr. Gallie came to me a little while before the meeting, and he said to



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me, "In God's name, Ottolengui, I see I am down for a speech, and I have not the first thought." I said, "Well, Gallie, you were awfully good to me when I was out West, and I have written a splendid speech; if you want it I will give it to you." That is why he did not like to speak ahead of me, and now he will get up and make my speech. (Laughter and applause.)

I believe I am in the company of friends and I
Dr. D. M. Gallie. believe the gentlemen around this board are good judges of a speech. Dr. Ottolengui has told you that he has prepared an elegant speech for me. Now, you have just heard one of his harangues and I don't believe you can stand another, consequently I will have to inflict one of my own speeches upon you.

As a matter of fact I have been disturbed all day concerning the duty assigned to me for this evening, and I went to my friend Dr. Root and said to him, "I would give the world if I could get out of responding to a toast this evening." "Why?" said Root. I said, "Because there are only two men in this country who can make a good after-dinner speech, and those are you and Bertie Lee Thorpe." Root looked at me for a moment and said, "You are pretty nearly right; but why mention Thorpe? He is not around." (Laughter.)

But your committee approached me yesterday and pleaded, and pleaded, and pleaded with me to respond to a toast this evening. They said, "Why, just open your mouth and liberate five minutes worth of hot air." So after giving it a great deal of thought, and stimulated by a desire to get ahead of another fellow, I am just going to take you into my confidence and tell you why I consented.

For the past two years Dr. Jack Nyman has been trying to earn a few free meals by doing just such a stunt as I am doing this evening. He has been butting in into my territory and filching a few of my copyrights. So I decided that I would forestall him on this occasion, and I reluctantly consented to respond. I said to the gentleman, "Now can you give me the names of the all star cast and the stunts they are to do?" He said, "I guess I can. Stockton is to be Toastmaster and he can outclass Chauncey Depew and make Rufe Choate look like an amateur; then there will be Root, the hot air man, who will say something about heated atmosphere in Kansas; Harry Carleton of San Francisco will respond to the toast, A Little Fragrance from the Land of Fruit and Flowers. Bertie Lee Thorpe, the boy orator of Missouri, will bring to us a message from the Bad Lands, while Eddie Hunt will say something about Wisdom from the Land of Authors, and Ottolengui, the rival of Dr. Conan Doyle, will give us a Roar from New York. Now," said he, "Dr. Gallie, what



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is the subject of your toast?" And I, as characteristic of myself and the town from which I come, said, "A Zephyr from the Mild West."

After he left me I felt the enormity of the responsibility and tried to collect my divorced thoughts; they left me when they saw how I was becoming contaminated by association with Root, Meeker and other speedy ones around here. But I could think of nothing, so I took a noble steed and rode up to the summit of one of the beautiful peaks that abound around here, to commune with the angels and receive inspiration so that I might in a measure be fit to compete with the postprandial giants whom you have listened to this evening. But wherever I looked I was haunted. I could see the cold eye of one of Ottolengui's sleuths watching me. I was tormented by a hot blast from Kansas and in a measure stifled by the sweet perfume from California. So I came down the mountain again to throw myself upon your mercy and apologize for inflicting myself upon you this evening.

I can assure you, Mr. Toastmaster and gentlemen, that this is a delightful occasion, and I can assure you that I do not feel anything like a friend of mine who was given a new territory to travel in. He arrived late one night in a town which is noted for the manufacture of cereals—the town of Battle Creek. He jumped into a cab and was driven, as he thought, to a hotel. He retired for the night and in the morning got up with a pretty good appetite, went down to the dining room and was waited on by a pretty little maiden with a clean print dress and white cap. He said, "Guess I will have a tenderloin steak and some lamb chops." She looked at him a moment and said, "Why, my dear man, we do not serve such stuff here. You evidently do not understand the custom here. No meat is served in this place, only cereals." He says, "What are they?" "Well," she says, "there is Macadam, alias grape nuts; shredded wheat biscuits, better known as excelsior," and she went on and enumerated the various new foods. In disgust he got up and went to the office and protested. He said, "What kind of a darn hole do you call this?" The clerk tried to explain. "My dear man you are at fault. You don't understand. This is not a hotel; this is a sanitarium, where people come to be cured of ills and ailments. It is run by the Seventh Day Adventists." The traveling man, who was more familiar with tough stories than he was with religious sects, said, "Who are the Seven Day Adventists?" The clerk, who was a Christian and an Adventist, looked at him in surprise and said, "My dear man, they are a religious sect who believe in the second coming of Christ." The traveling man says, "Look here, young man, I want to put you wise; if the Saviour has been at this place, once you need not expect to have him come back again." (Laughter.)



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I can assure you I feel very different from that and if I have a chance to come back to this glorious State, and an opportunity to meet again with the Interstate Dental Fraternity, I will travel very many miles to do so. (Applause.)

But in all seriousness, gentlemen, I think there is a great work for this Fraternity to do, that it has an excellent work to perform at our national meetings. We attend these meetings, traveling hundreds of miles to be present, and oftentimes we find that apparently the most important thing about the meeting is the election.

The average attendance at a National meeting is about three hundred—a very small number when you consider that the Association represents the profession of America. We should have a thousand in attendance, and I believe we could if the proper course were pursued.

I have known men to come to the National meetings with excellent papers; they have given the subject matter of these papers careful thought and preparation; they have spent days and nights in the work, and the result is that the papers which they expected to read before the dentists of the country were oftentimes sidetracked or read by title, for the simple reason that a lot of work that amounts to little was allowed to take up the time which should be devoted to the discussion of dental science and to subjects that would be for the advancement of the profession. It is the duty of this Fraternity to use its influence to make our National meetings the most interesting, profitable and enjoyable of the year.

There is also great work for this Association to do as a fraternal organization in binding the dentists of the country together, to bring us into closer touch with each other, so that the three sections of this country, the Atlantic Coast, the Mississippi Valley and the Pacific, will be joined by the three links which will secure for them all that is good and noble and honorable in the profession.

Mr. Chairman, by a unanimous vote of this Association I have been selected—not on account of my beauty or my winning ways, or my oratorical powers, but just simply selected—to read a set of resolutions prepared in honor of this occasion, and to make a presentation.

The resolutions are as follows:

Resolutions presented to Dr. Chas. A. Stockton, of Newark, N. J., at the smoker of the Interstate Dental Fraternity at Asheville, N. C., July 28, 1903:

Whereas, Some one in his infinite wisdom, or foolishness, deemed it wise to discover a foreign country in this great and glorious land of ours, and after discovery found an elephant on his hands and for centuries it has been a problem with the surrounding country and the author-

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ities therein whether to annex, subdue or eradicate the soil with the natives inhabiting said country.

As Yet, The problem is unsolved, for of what practical benefit would it be to obliterate the boundary lines existing, for at present its infant and matured industries apparently consist of raising Incorporation fees, Presiding Officers, Indigestion and Mosquitoes.

But the Time May Come, when we with our inscrutable wisdom may tear down the fence, and in this day of rapid advancements, the inhabitants of this strange land may, and should, ascertain the exact time of annexation.

And You, Our honorable presiding officer being an inhabitant of this strange land, it is our desire and our pleasure to express our love, our esteem and our admiration for your wonderful staying powers and digestive qualities demonstrated by your long residence in New Jersey, and as a magnificent token of our appreciation we have assessed each member of the Fraternity besides draining the treasury, and blown the assets into a North Carolina product, which, when Gabriel blows his trumpet, and the fences are torn down, we guarantee will stop at the exact time and never again will its hair trigger or Connecticut movements be strained, thus remaining a lasting remembrance of the advancement of civilization.

(Signed) CHARLES A. MEEKER,
JOHN F. DOWSLEY,

{SEAL}

Committee on Banquet.

And in this connection I take great pleasure in handing to you a present from the Association, and I hope that these resolutions and this presentation will be added to the archives of the Stockton family to go down through all time.

(Dr. Root here handed Dr. Stockton a package, which, upon being opened, was found to contain a watch and chain.)

I am very glad to have been presented with
Dr. G. S. Stockton. this tonight, as it will enable me to call "time" on the long-winded orators yet to speak. I feel that this occasion will make every one of you ambitious to occupy the place I hold this evening.

The watch is just what I want above all other things, for time will go on no more with me now. And the only thing I regret is that on account of your generous contribution to purchase this costly and beautiful gift your stay at this beautiful hotel will necessarily be shortened.

Without expressing further my thoughts with reference to the author of these resolutions, I will simply say that I shall cherish both the resolutions and the present with a great deal of pleasure, and hand them down



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with other archives to my family and descendants. Dr. Stockton then called upon Dr. Carlton, who responded as follows:

I am glad to be with you here tonight at the first meeting of this Interstate Fraternity to represent in that modest way (peculiar to all Californians) the profession of the Pacific Coast.

Glancing about me I see many good reasons why I should have kept my seat and kept still also. If a man is fat and well dressed and able to keep his mouth shut, he can bluff everybody, and pass for almost anything; but it is different with me. Apologies I have none for my appearance before you on this occasion; there can be none. I was tempted and I fell and you are here to view the fallen ruins.

A latter day philosopher has said, that even an emotional woman can resist temptation, when offered by the wrong man at an inopportune time. In my case, however, the right man, in his genial, well meaning manner, asked me to do what I am now attempting to do; so here I am, an object of discomfort to myself and pity to my friends. I tried gracefully to get out of being placed on the card, but all excuses were ignored and I was told to "brace up, Harry, go in and spread yourself." That reminds me of the farmer who sent his small boy out to the barn to put some eggs under a little brown hen who was determined to set. The lad was gone a long time, but finally reported and was asked if he had done what he was told to do. He said he had. "How many eggs did you put under her, sonny?" "Seventeen, dad." "Seventeen! Why did you put so many under such a small hen?" "Well, dad, I wanted to see the darn fool spread herself." My sympathies go out to that little hen this evening. (Laughter.)

This will not be a speech if I can help it, and I shall occupy but a few brief moments of your time. I suppose I am called upon because I come from California, from the West, the real West. I have heard so many people designated as coming from the West that I am glad for once of the opportunity to stand up before a body of men like this, as a representative of what really is "the West." You talk about going to Chicago, you talk about going to St. Louis and think you are "out West." By gosh, sir, you never have got out West until you reach California. (Applause.)

All Californians are expected to be liars. I have been called most everything since I arrived here but that. Our friend Holly Smith, for whom I have the greatest admiration in the world, fondly designates me "That damned little rabbit from California." My side partner here, Root from Kansas, in even more forcible language, has described me in a man-

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ner that I am unable to repeat, but I cannot help but agree with him, because I have spent most of my spare time at a spot in the northeast corner of the basement of this building. You can guess the rest.

But back to the liar! We are expected to lie about our State, and you may think I am going to paint you a beautiful word picture about its fruit and its flowers, its fog and its fleas; but for this portion of the regular California response, I am pleased to refer you to a little pamphlet published by the Northern California Promotion Committee (copies at hotel office) containing all the statistical and descriptive things I might have to say. No man from Northern California ever has anything to say about the Southern part of the State. There is but one real city out there, San Francisco. True, Los Angeles is on the map; they plant consumptives and raise oranges down there. I might mention in passing, however, the simple fact that we ship the first oranges to you good people from the North. So much then for the geography, the products, and the people of my State, in response to whose name, my still small voice is always glad to make answer. She lies on the extreme edge of the Continent; but while she reaches out one wide open hand to the great mysterious Orient, she holds in the other with loyal grasp the fellowship of the rest of the nation. This world of human life and activity has become so great and diversified that most of us are apt to create within it little worlds of our own, finally becoming so nearsighted that we can see but little beyond its boundaries. Though we, the California members of our profession, dwell far from you, we are with you in spirit. We *must* live together (rapid communication and transit make this possible), for in this comes not only a strong profession, but a strong people. We have a great and grand professional body of men out in the West; it is a younger generation perhaps, but it is alive and kicking. We are glad we know you, and of you, and propose to keep in touch with you always. It has been my blessed privilege to meet with you many times in the last ten years, and I have traveled many thousands of miles to do it. It gives me the greatest pleasure in the world, in going home from meetings such as this, to tell my friends on the Pacific Coast what a splendid body of men you are, and what good friends you are to me; for my reward has come in the many and close friendships formed among you. And after all the most welcome feature of a great Fraternity meeting like this is the opportunity it presents to get closer to our friends; to evince our appreciation of the many kindnesses great and small, shown since last we met. Whether we be rich or poor, young or old, hale or feeble, friendship, genuine friendship, is the biggest thing there is; friendship that stands the test of summer's heat, or winter's cold; the kind that rings when struck and never rusts out. And we of the West want your friend-



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ship, and want it bad. It is that which brings me out of the extreme West, and I am glad to take my share home.

Let me close with this little bit of verse written a long time ago by one of your Eastern men, who had jumped over two ranges of mountains, the Rockies and Sierra Nevadas, and landed in 'Frisco, staying there long enough to become imbued with the spirit we have, out close to the setting sun.

"Oh I want to go to 'Frisco, and I want to go to stay,
For there life's worth the livin', and workin's just like play.
There the golden poppy's bloomin', and the grapes are on the vine,
And the breeze from off the ocean's just as good as any wine.

Oh there, if I remember right, the sky's a bluer blue,
And the flowers, always bloomin', are of a brighter hue,
And the birds somehow sing sweeter, and in quite a different way,
And the climate, well its perfect,—most every month is May.

And your friends stay by you better, leastwise so it seems to me,
And you have a kind of feelin', so good and loose and free,
That when once a man has felt it, no matter where he stays,
He loves the 'Frisco people, and the 'Frisco peoples' ways.

I've been a powerful loafer, and a roamer in my day,
But somehow I've seen few places where a fellow cared to stay;
But there's something 'bout old 'Frisco, must be something in the air
That keeps me just a longin' and a longin' to be there."

I am about to introduce to you a gentleman you
Dr. G. S. Stockton. will all be very glad to hear. I never had the pleasure of knowing him personally until I met him in Asheville, but I have heard him make several speeches since I have been here, some good, some not so good, but one today, "The Response to the Address of Welcome," that was simply magnificent.

I have great pleasure in calling upon Dr. Thorpe, of St. Louis, to respond to "A Message from Missouri."

I consider this, the christening of this Fraternity, a very happy occasion, and I have been reminded whilst listening to the dignified and able efforts of the gentleman who is so gracefully presiding at the head of this table, of the remark of Bishop Williams, of Nebraska, when he said that "The functions of a toastmaster and a set of artificial teeth were identical, for they both are used to fill in the gap between the jaws." (Laughter.)

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I bring you a message from Grand Old Missouri, and I do so with the most hearty greetings from the Missouri Interstate members, for we have a good lot out there of hale and hearty fellows well met and of the right sort. You who know anything of the West, in days ago, know there were many of the grandest old men of dentistry in the United States whose homes were in Missouri and especially in St. Louis. A number of men whose names will ever live in dental history standing prominent as advanced and progressive thinkers, a fine galaxy of men, among whom were Hale, Spaulding, Barron, Leslie, Judd, Peebles, Forbes, Chase, Eames, Morrison and last but not least that prince of good fellows—the Beau Brummel of American dentistry—Henry J. McKellops. (Applause.) In St. Louis today we have two of this class of gentlemen still in the harness. I refer to A. H. Fuller and Geo. A. Bowman. We also have another talented gentleman whom we are very proud of in St. Louis who has done more for his specialty in dentistry than any other one man in the world. I refer to Edward H. Angle, the world's most celebrated orthodontist. (Applause.) We have another man whom we love in Missouri, a man who for the past thirty-five years has been prominent as a society worker, as a dental journalist and as a dental college teacher. I refer to Missouri's most distinguished and representative dentist, John D. Patterson of Kansas City. (Applause.) We have a recent importation of whom we are also proud, who has just arrived in Missouri from wild and wooly Kansas, a man who is famous throughout the United States for his ability as an orator, who can pluck the tail feathers from the American eagle and scatter them to the four winds and who has, as a humorist made Mark Twain and Bill Nye look like fifteen ounces. I mean the funny Joe Root, "formerly of Kansas." (Applause.) And with the enthusiasm of other Interstate Fraternity men we feel Missouri can pledge you her most loyal support.

There is one matter that I desire to speak of seriously tonight and that is the event which is to take place next year in St. Louis on which the eyes of the dental world are centered, which will be the greatest event in the history of dentistry—The Fourth International Dental Congress to be held during the Louisiana Purchase Universal Exposition in commemoration of and celebrating the historic event of Napoleon signing away an Empire, and Jefferson purchasing the Louisiana territory for fifteen million dollars, the same amount that has been appropriated by the government of the United States, the State of Missouri and the city of St. Louis to expediate, exploit, promote and equip the Universal Exposition.

Upon that occasion all nations will be represented as well as all arts, sciences, trades and professions, and it is aptly fitting that dentistry, oc-



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cupying the high position it does as an art and science, should demonstrate her achievements and growth. The spirit of the Exposition is to show man's highest development, and the product of his best thoughts and talents will be brought out. Dr. Peabody (peace to ashes), has nominated the Exposition as "A Golden Mile Stone in the Highway of Human Progress."

The Fourth International Dental Congress is assuming tremendous proportions and will be, I repeat, the greatest event in the history of our profession. Every active, progressive dentist will lend his aid, both morally and financially, to support this Congress. In this great effort, we need energy, enthusiasm and force. When I speak of force I do not refer to the patent breakfast food that Don Gallie eats three times a day to restore his mouth and manhood, but by force I mean the force of action and the concentration of effort, thought and talent.

I invite you all to the International Dental Congress to be held next year, and I pledge this Fraternity the support of St. Louis and Missouri's Fraters who are all loyal congress supporters. We like fraternities; we like good fellows, you are of the right sort and we kiss our hands to you. As Dr. Carlton has said, what does this life amount to unless there is in it a fraternal feeling among men, unless there is good fellowship which alone makes life worth living. William Morris perhaps has defined fellowship better than any one when he said, "Forsooth, brothers, fellowship is heaven and lack of fellowship is hell; fellowship is life and lack of fellowship is death, and the deeds that ye do upon the earth, is it for fellowship's sake that ye do them?" A word, a smile, a "thank you," a "God bless you" in this life is far better than eulogies long and loud after one is dead. Personally, I would rather have one little flower pinned on the lapel of my coat by some kind hand and loving hand in life, than to have all the flowers in Christendom piled high on my casket after death. (Applause.)

Missouri members send you their most hearty and fraternal greeting, and you can count on us for the support that you will demand. We appreciate the Fraternity down there, and will be most active in the future. I believe the men who have organized this Fraternity have done a good work, a work which in time will tell. Of course, the intention when this Fraternity was organized was not that it should be a political body, nor was it to be used for political ends, but I believe that we can use our influence to raise the standard of American dentistry and especially make the National Dental Association meetings enjoyable socially. I believe the men who organized this Fraternity have exemplified the sentiment of Edwin Markham when he said:

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"Who puts to place a fallen bar—or flings a stone from out a traveled road,

His feet are moving toward the Central star—
His name is whispered in the God's abode."

So I believe of you who have been the organizers and promoters of this Fraternity, that in time to come your names will be whispered in the God's abode. (Applause.)

I used often in the East to hear of Hoosierism,
Dr. C. S. Stockton. but I never knew exactly what it meant, and I call upon Dr. Hunt to inform us what it is.

Whenever called on for an after dinner speech
Dr. George Edwin Hunt. I am reminded of the gentleman of Celtic origin, who had contracted the habit of chastising the wife of his bosom with a baseball bat. One evening his indignant fellow-townsmen started him out of town seated on a rail borne by many helping hands and the Irishman remarked, "Bedad, av it wasn't for the honor of the thing, Oi'd rather walk!"

Previous speakers have extolled their several sections of country. Indiana is no mean State, as Indianapolis is no mean city. We have all of the delicacies of the effete East, many of the gymnastics of the wooly West and some of the delightful hospitalities of the sunny South. The East has its soft shell crabs and ortolans, the West has its jerked venison and its Roots, the South its orange blossoms and its succulent fried chicken, while we in the Middle States benefit by all that is good on every hand.

Here in North Carolina I find the air extremely pure. Its purity seems blown in the bottle, but we occasionally put on a few airs in Indiana. We have in our city, as in all good cities, a society for taking the children of poor people to the country, known as the Fresh Air Mission. Last June a little waif of the streets with his intimate linen depending through unpaid rents in his outer habiliments, was persuaded by agents of the Fresh Air Mission to try the country for a time, the idea being that his system would be recuperated and invigorated by plucking dandelions with his toes and being kicked by the cow. The first day on the farm a very good imitation of a Kansas cyclone picked him up and carried him, mixed with comminuted lumber that had once represented the chicken house, for several miles. When he lit, people in that locality detached him from the lumber and learning his story, offered to take him in their homes for a few weeks, but the little fellow objected, saying that he only came out at the solicitation of the Fresh Air Mission and he thought there was "too damned much fresh air out here to suit him."



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The air or something down here has been almost too much for my Indiana blood. I seem to have trouble in getting any sleep. This is one of the most "insomniac" places I ever saw. And speaking of sleep reminds me of a story on Joe Root. It seems that Root is a deacon in his church at Kansas City. He passes the plate, I believe. There are rumors that Root's plate often comes up a little shy. It is generally believed that he goes on the principle of the old time railroad conductor who collected cash fares as often as possible, stepped into the baggage car, threw the money in the air and gave all that stuck to the bell rope to the company.

It seems that Root recently attended prayer meeting and went to sleep. At a certain stage of the proceedings the pastor said, "Brother Root will please lead us in prayer." No response from Root, so again a little louder, "BROTHER ROOT WILL PLEASE LEAD US IN PRAYER." Brother Root continued to be noisily silent, so the parson shouted, "LEAD, BROTHER ROOT, LEAD!" And Root responded sleepily, "Taint my lead, I just dealt." (Laughter.)

Brother Gallie is from Chicago and I was much embarrassed while he was speaking because those Chicago boys know so much about me that I would prefer should not be told. I go to Chicago frequently and generally forget to take a night shirt. So I have gotten up quite a collection of Chicago night shirts. I am thinking of bequeathing them to the Chicago Athletic Club to be placed in the grill room and labeled "The Hunt Collection of Chicago Night Shirts, Accumulated by the Indefatigable Donator and Dedicated to the Betterment of Marital Relations." Some of them have frills at the top and some of them have frills at the bottom.

Now I cannot conceive of any reason why I should not recite to you a short poem. The only reason I have for this is that ever since I heard it I have been trying to relieve myself of it. Most of my friends have "had the pleasure" but it still lingers in my system. A party of us were dining at the Duquesne Club at Pittsburg and our host had successfully pulled off a very unique dinner in which the fourth course was thick, juicy broiled beefsteak smothered in onions, with champagne on the side. That is all I remember of the dinner. There may have been other things. I think there was bread, but anyhow, our host recited these verses:

You know James Whitcomb Riley, General Lew Wallace and myself are all from Indiana, but none of us have written much lately. Some years ago I edited the *Indiana Dental Journal*, which might perhaps better have been called the *Monthly Dental Outrage*. I wrote all my editorials when mentally incapacitated for other work. In an inadvertent moment I published an editorial in which I quoted the familiar line from Pope beginning, "Vice is a monster of such hideous mien." Had I known

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what would follow, I would not have done it for the world. Even yet when I think of it I could cry like a child. You see, my friend Ottolengui, who is, I am informed, the editor of a journal published in Philadelphia or somewhere, misconstrued my editorial, thought I was attributing the lines to a contemporaneous writer and wrote a long editorial to prove that Pope had written them. It pained me considerably because the common schools are still working in Indiana.

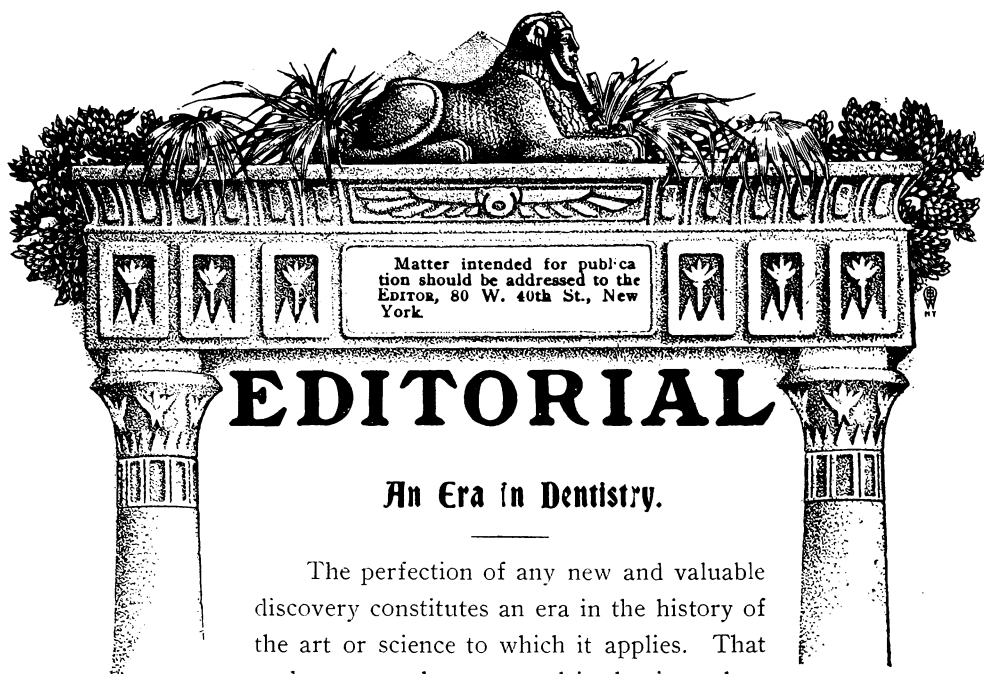
The poem to which I referred, runs as follows:

COWARD JOE.

Joe war a coward: yas, ther w'arnt no doubt o' that—
He were askeert uv his shadder, an' many a time I've sat
An' watched the fellers a guyin' him, an' callin him names, you know,
An' he tuk it all like an innercent lamb, fer thar warn't no fight in Joe.
But ye can't allus jedge by appearances, an' ye'll sometimes find in th' end
That looks is mighty deceivin'; and often, I'll tell ye friend,
Ye'll find there's a heart a beatin' in a so-called coward's breast
Thet's braver and stronger and truer than under a soldier's vest.
So, when yaller fever struck the town, that dreadful scourge uv man
Spreadin' disease and death in its path as it swep' o'er the land—
Brave men paled with an awful fear and fled, leavin' children and wives,
'Neath the ghastly folds of that yaller flag—fled to ther hills for ther
lives.

Now, whar in that hour o' peril—whar then war the Coward Joe?
Did he desert his darlin' wife, an' forsake his little kid,
An' flee to the hills as the other men men fled?
You bet your life—he did!





Matter intended for publication should be addressed to the Editor, 80 W. 40th St., New York

EDITORIAL

An Era in Dentistry.

The perfection of any new and valuable discovery constitutes an era in the history of the art or science to which it applies. That such an event has occurred in dentistry does not appear to be sufficiently appreciated.

There is probably no one operation performed **Arsenical Treatment of Exposed Pulp.** by dental practitioners, which has been more widely or more constantly discussed than the treatment of pulps and of pulp canals. It is the recent dictum of certain specialists that in the presence of specified pathological disturbances the future usefulness of the tooth may be prolonged by intentional pulp extirpation. The majority have been slow to follow even where they may have accepted this tenet. Why? The answer may be found in the single word, arsenic. For a century (and perhaps longer) in the presence of pulp exposure the only resort has been an application of arsenic. Sporadic experiments have been made with other medicaments, until chemical analysis has shown that the newly advised remedy contained arsenic in some form as its active agent. Thus always there has been a quick return to arsenic itself and the abandonment of the method tentatively adopted. Where pulps have been found exposed through the depredations of caries the dentist has felt compelled to use arsenic, but with each application there has been some apprehension. First because of the frequent sequence of pain; pain from its simplest form through the gamut up to horrible



agony, with a sleepless night and a depleted physical vitality. Again, all too often, even after pulp removal under the most antiseptic precautions, acute pericementitis has been noted. Prior to the perfection of antiseptic methods this was attributed to infection from the broach, but now it is generally accredited to arsenical poisoning causing an apical irritation.

**Pulp Removal
Without Arsenic.**

In the presence of these difficulties many experiments have been made in the direction of immediate pulp removal under anæsthesia, general or local. Before the discovery of cocaine, some administered gas and so painlessly removed the pulp tissue. But at once a new obstacle was found. Hemorrhage! After an application of arsenic there is usually little if any hemorrhage, but following the removal of a living, healthy pulp the hemorrhage is always considerable, and in those of anaemic temperament often copious and troublesome. For a time, therefore, arsenic again held sway. With the advent of cocaine a new series of attempts were made. Some reported success by slow hyperdermatic injections, but this attracted little credence or following. Then followed cataphoresis, and this was very successful, but very slow, and after a time cataphoric appliances lost their place in the dental armamentarium. Pulp removal under cataphoretic application of cocaine likewise met with the troublesome hemorrhage, but by this time the peroxide of hydrogen preparations were at our disposal and because of their hæmostatic action were helpful. Still as has been noted, cataphoresis has lost its popularity, and so arsenic became dominant again. But during the discussions on cataphoresis an important suggestion was made, with the final result that pulp treatment has been solved.

Under the auspices of *ITEMS OF INTEREST* a meeting of dentists was held in the White Mountains during the summer of 1897. During a discussion on cataphoresis Dr. William J. Morton used the following language (*ITEMS OF INTEREST*, Vol. XIX, p. 717-8):

"It occurred to me that I might dissolve hydrochlorate of cocaine in ether and . . . produce anæsthesia, but I tried it and found that the cocaine salt would not dissolve in ether. . . . I finally dissolved my cocaine in guaiacol. I made a strong solution and added half and half of sulphuric ether and there was no precipitation of the cocaine. I had a very small test tube on the table and I put some of the guaiacol sulphuric



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ether and cocaine into that tube, pressed the mouth of the tube on my arm and asked my assistant to time me; I held it there for five minutes . . . and taking a needle, I found my skin was numb. I had made an experiment that established a new order of things, which I have christened *Pressure anæsthesia*. I think it is for you to judge, but there will probably occur to you cases where you would prefer this simple solution to using the battery. I throw out this suggestion, which I myself have verified by experiment, and I hope some of you will try it and report on it."

**Pressure Anaesthesia
for Painless
Pulp Removal.**

The proposition of Dr. Morton was almost immediately adopted. A prominent drug house within a few months marketed a solution of this character, which was used for obtunding sensitive dentine and remarkable results were reported. Practitioners soon found that the pressure produced by the evaporation of the ether was not always efficient, but the word being suggestive, mechanical pressure was essayed and the problem was solved, at least so far as the anaesthetizing and removal of the pulp was concerned. For several years the removal of pulps by pressure anæsthesia has been coming into more and more general use. There still remained, however, the occasional trouble with hemorrhage, and this was not confined to the mere flow of blood during the sitting. Too often after treatment the patient would return with severe pain caused by the blood pressure at the apex, due to uncontrolled hemorrhage. At this juncture the papers of Dr. Clyde Davis appeared, recommending the use of adrenalin in connection with the cocaine pressure anæsthesia, and any further use of arsenic should be a very rare requirement. The adrenalin not only acts as a hæmostatic, but appears to violently contract the pulp, thus enabling the operator to fully uncover it.

In a recent private clinic in the writer's office, the pulp at first was highly sensitive and appeared to protrude from the minute aperture of exposure. Adrenalin applied with pressure for two minutes caused a visible contraction of the pulp so that a broach could be passed slightly through the opening before any response was made by the pulp. Moreover the engine burr was then freely used to fully uncover the pulp, and this caused no pain although no cocaine had yet been exhibited. Pressure anaesthesia with cocaine crystals macerated in adrenalin was then utilized for two minutes (timed accurately), and the pulp was painlessly removed. Slight



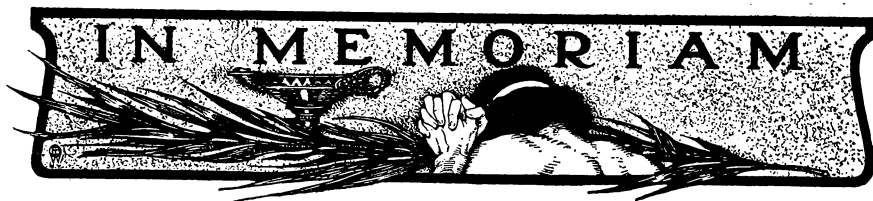
hemorrhage ensued which, however, was readily controlled by dressing the canal with adrenalin on a whisp of cotton for three minutes.

It is not the present purpose to discuss the technique of pulp removal, but merely to emphasize the fact that the dental profession now has at hand a ready means of removing pulps painlessly, and without the aid of arsenic. The method advocated by Dr. Clyde Davis appears to be an advance over others and should be tried by all. It seems to be successful in all cases, though in some repeated applications may be required. A possible exception may occur in the presence of calcification of the pulp, especially when in the form of nodules. The technique and the variations in application of the method to meet varying conditions remain to be fully described, and should make a valuable thesis when written. For the present, it suffices to congratulate the profession that the suggestion of Dr. Morton and his discovery of pressure anæsthesia, culminating in the method of pulp removal outlined by Dr. Davis, abolishes arsenic and its unpleasant sequences. It is gratifying that both of these ideas should have been first published in *ITEMS OF INTEREST*.

Death of Dr. Taft.

Just as we go to press we hear with deep regret of the demise of Prof. Jonathan Taft, who for fifty years has been one of the best known men in our profession, and it may be sincerely and truthfully added, one of the best beloved. The profession loses one of its most distinguished members, a man who has ever been an inspiration to the younger generation and who has always placed himself on the side of higher attainments, more advanced education, and professional dignity. A full account of his career will appear in the next issue.





Dr. F. Y. Clark.

Dr. Finlay Yerelien Clark died at his home at The Geysers, Saratoga Springs, N. Y., aged seventy-four years and five months.

Dr. Clark, who was born in Toronto, Canada, on March 26, 1829, was one of five children, and was the son of Archibald and Christina Fletcher Clark, of Inverness, Scotland. In 1838 Dr. Clark's parents, with their children, three sons and two daughters, removed from Toronto to Caledonia, N. Y., where they remained until the death of his mother in 1846.

Young Clark, who evinced unusual ability and force of character, attended school in Caledonia and he fitted himself for his chosen profession dentistry in Rochester, N. Y. Some time after having entered on his profession he received his diploma from the Baltimore Dental College. On account of his skill in surgery he received the degree of Doctor of Medicine from the Savannah Medical College, in 1857. For a short time he practiced dentistry in the State of Mississippi. Then he removed to Griffin in Upper Georgia, where he lived for a period of six years.

While residing in Griffin Dr. Clark married Miss Martha Stokes, daughter of Dr. Henry E. Stokes, the marriage taking place in 1852. Mrs. Clark, who was an invalid for a long period, died in 1871, in Savannah, where they were living at the time and the doctor was practicing his profession. Being a Southern woman the doctor remained with her in the South during the Civil War, and although from long residence there he felt a strong sympathy for the people, he yet remained loyal to the Union throughout the long struggle. His loyalty, however, cost him much and there were many broken friendships in consequence.

Doctor Clark lived in Savannah altogether twenty years. The foremost people were his patients, and so successful was he that engagements were made for months in advance. He was a specialist in dentistry and young men often sought his advice and were glad to receive his instruction. The celebrated Dr. Evans, who resided in Paris, in coming in contact with Dr. Clark's patients, frequently complimented him on the excellence of his works.

Dr. Clark married for his second wife Miss Amy Alma Waite, daughter of Walter Waite of Niagara Falls, Ontario, otherwise known as Drum-



mondville or Lundy's Lane. The second Mrs. Clark's ancestors were residents of the colonies before taking up their residence in Canada. They went from New Jersey to St. John's, New Brunswick. They were noted people and were among the leading loyalists.

Dr. Clark visited Saratoga Springs for the first time in his eighteenth year, and, attracted to the place, he afterwards made an annual pilgrimage to the famous Spa. In the summer of 1856 he was induced to take the place of the late Dr. Charles H. Payne, the latter having taken charge of Union Hall. Some twenty-five years ago he built his elegant residence at The Geysers, where for the last fifteen years he made his permanent home, taking a deep interest in the development of this suburb of Saratoga.

On the first of July last he began to feel premonitions of the sickness which was to prove fatal. Six days later the crisis came when he was stricken with paralysis. From the first he felt that he would not recover. He had the best medical aid and most skillful nursing, but gradually his strength failed until the end came. He is survived by his wife who was constantly at his bedside up to the last.

Dr. William Andre Campbell.

The following resolution was passed by the Second District Dental Society on the death of Dr. William Andre Campbell, April 13, 1903.

Dr. William Andre Campbell died at his residence in Brooklyn, March 17, 1903.

Dr. Campbell was born in Passaic, N. J., December 30, 1844, and when sixteen years of age commenced the study of dentistry in the office of Dr. H. N. Stratton, of this city, and in 1877 he passed an examination before the New York Board of Censors and had conferred upon him the degree of Master of Dental Surgery (M.D.S.)

He was a charter member of this Society when it was organized in 1868, and up to the time of his death he had continued one of its most active and influential members. In 1877 he was elected a delegate to the State Society; in 1879 he was elected Librarian of this Society; in 1883 he was elected its Vice-President, and in 1890 was elected its Treasurer.

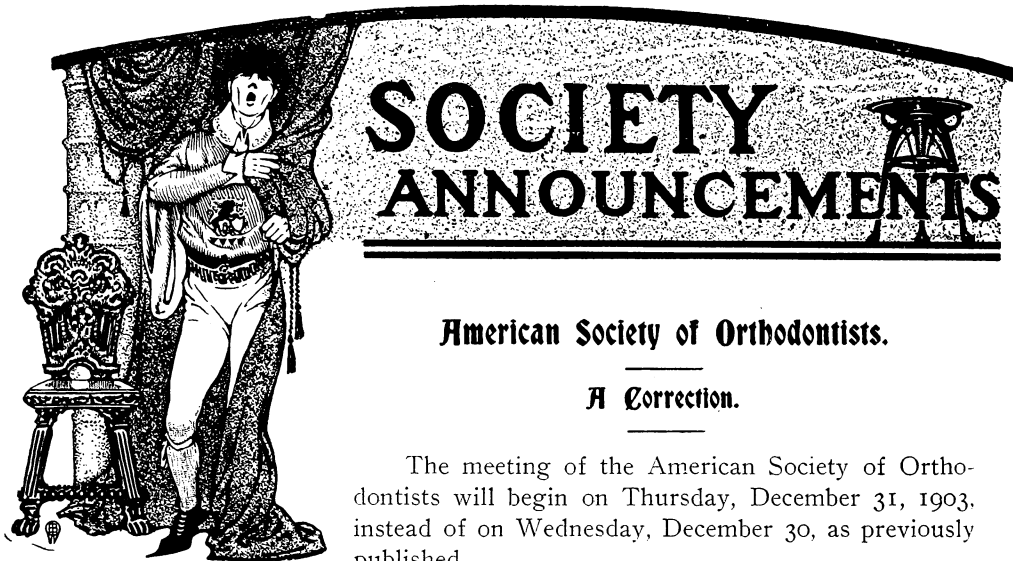
Dr. Campbell was an intelligent, able and progressive member of our profession, ever conscientiously seeking to render the best service to those who had committed their teeth to his care. Large hearted and of a happy, genial disposition he had endeared himself to his fellow members of this Society and to a large circle of friends. His death is a great sorrow to us and we shall miss his always welcome face at our meetings.

Resolved, That a copy of this minute be entered in full upon a page in the record book set apart for the purpose and also a copy of it be sent to the family of Dr. Campbell.

(Signed)

WILLIAM JARVIE,
F. O. KRAEMER,
F. B. KIPPY,
Committee





SOCIETY ANNOUNCEMENTS

American Society of Orthodontists.

A Correction.

The meeting of the American Society of Orthodontists will begin on Thursday, December 31, 1903, instead of on Wednesday, December 30, as previously published.

The meeting will be held at the Iroquois Hotel, Buffalo, N. Y., and a most interesting programme has been prepared.

ANNA HOPKINS, Sec'y.

Institute of Dental Pedagogics.

Programme of the meeting to be held in Buffalo, December 28, 29 and 30 at the Iroquois Hotel. All interested in education and the elevation of the standards of the dental colleges and students are very earnestly requested to attend this meeting.

President's address, "Some Faults of the Prevailing Dental Training," Dr. J. D. Patterson, Kansas City. Discussion to be opened by Dr. John I. Hart, New York; Dr. B. Holly Smith, Baltimore; Dr. H. P. Carlton, San Francisco, and Dr. Geo. E. Hunt, Indianapolis.

Prosthesis—two papers—(a) "Methods of Teaching the Artistic Elements of Prosthetic Dentistry," Dr. A. O. Hunt, Omaha, Neb.; (b) "Methods of Teaching the Anatomical Arrangement of Teeth," Dr. B. J. Cigrand, Chicago. Discussion to be opened by Dr. N. S. Hoff, Ann Arbor; Dr. G. H. Wilson, Cleveland; Dr. R. R. Freeman, Nashville, and Dr. F. H. Berry, Milwaukee.

"An Ideal in Pathology." Paper by Dr. D. R. Stubblefield, Nashville. Discussion to be opened by Dr. H. A. Smith, Cincinnati; Dr. T. B. Hart-



SOCIETY ANNOUNCEMENTS

zell, Minneapolis; Dr. A. H. Peck, Chicago, and Dr. O. L. Hertig, Pittsburgh.

"Orthodontia Technology." Two papers, Dr. S. H. Guilford, Philadelphia, and Dr. C. S. Case, Chicago. Discussion will be opened by Dr. W. E. Grant, Louisville; Dr. A. E. Webster, Toronto; Dr. H. B. Pullen, Buffalo, and Dr. H. T. Smith, Cincinnati.

"The Value of Instruction in Dental History and Literature." Paper by Dr. J. Taft. Discussion to be opened by Dr. H. L. Ambler, Cleveland; Dr. Charles McManus, Hartford; Dr. J. H. Kennerly, St. Louis, and Dr. B. J. Cigrand, Chicago.

"Porcelain Technology." Paper by Dr. H. J. Goslee. Discussion to be opened by Dr. J. Q. Byram, Indianapolis; Dr. Ambler Tees, Philadelphia; Dr. L. E. Custer, Dayton; Dr. H. L. Banzhaf, Milwaukee, and Dr. J. F. Ross, Toronto.

"The Dental Curriculum." Paper by Dr. Geo. E. Hunt, Indianapolis. Discussion to be opened by Dr. G. V. Black, and Dr. J. B. Willmott.

"How Shall Quizzes be Conducted?" Symposium by Dr. F. D. Weisse, Dr. R. H. Nones, and Dr. L. P. Bethel.

"Exhibition of Recent Teaching Appliances." Dr. W. G. Foster, Baltimore, and Dr. L. S. Tenny, Chicago.
Cleveland, Ohio.

W. H. WHITSLAR, Chairman Ex. Com.

The Interstate Dental Fraternity.

At the annual meeting of the Interstate Dental Fraternity held at Asheville, N. C., on July 29, the following officers were elected for the ensuing year: National Secretary, Dr. R. M. Sanger, East Orange, N. J.; National Treasurer, Dr. Charles A. Meeker, Newark, N. J. The following are the vice-presidents elected for the different States represented: Dr. C. Richardson, Fayetteville, Ark.; Dr. H. P. Carlton, San Francisco, Cal.; Dr. James McManus, Hartford, Conn.; Dr. E. A. Bryant, Washington, Dist. of Columbia; Dr. Hart J. Goslee, Chicago, Ill.; Dr. George E. Hunt, Indianapolis, Ind.; Dr. George A. Esterly, Lawrence, Kansas; Dr. Edmund C. Kells, Jr., New Orleans, La.; Dr. B. Holly Smith, Baltimore, Md.; Dr. John F. Dowsley, Boston, Mass.; Dr. Frank E. Moody, Minneapolis, Minn.; Dr. Burton Lee Thorpe, St. Louis, Mo.; Dr. Charles S. Stockton, Newark, N. J.; Dr. F. C. Walker, Brooklyn, N. Y.; Dr. J. A. Gorman, Asheville, N. C.; Dr. Henry Barnes, Cleveland, O.; Dr. I. N. Broomell, Philadelphia, Pa.; Dr. Dennis F. Keefe, Providence, R. I.; Dr. H. L. Banzhaf, Milwaukee, Wis.





Utah State Dental Association.

At a meeting held in Salt Lake City on October 8, the Utah State Dental Association, which has been slumbering for some time, was revived. The day was given over to clinics and papers which were very profitable. In the evening the dentists of Salt Lake City banqueted their visiting brothers, at which time about fifteen new members were enrolled.

The following officers were elected: President, W. G. Dalrymple, Ogden; First Vice-President, G. F. Steihl, Salt Lake City; Second Vice-President, J. W. Boisal, Salt Lake City; Secretary and Treasurer, S. W. Wherry, Ogden.

Ogden, Utah.

S. W. WHERRY, Sec'y.

Colorado State Board of Dental Examiners.

The next regular meeting of the Colorado State Board of Dental Examiners will be held at the Capitol in Denver, beginning Tuesday, December 1, 1903.

All applications for examination must be filed with the Secretary before that date. Examinations are theoretical and practical and applicants must be prepared to do such practical work as required.

For further particulars, address,

M. S. FRASER, Sec'y, 407 Mack Block, Denver, Colo.

Arkansas Board of Dental Examiners.

The next meeting of the Arkansas State Board of Dental Examiners will be held December 4 and 5 in Little Rock, Ark., for the examination of all applicants; those having applied for examination will report to the Secretary, Friday, December 4, at 9 a. m., with rubber dam, gold, plastic filling material and instruments, to demonstrate their skill in operative dentistry. Any one who wishes may bring their patients; so far as possible patients will be furnished. The Board will select the cavities to be filled. The examination will cover all branches of the dental profession. For further information write Secretary.

Little Rock, Ark.

A. T. McMILLIN, Sec'y and Treas.



First District Dental Society of the State of New York.

The First District Dental Society will hold a clinic and exhibit at the Grand Central Palace, Forty-third street and Lexington avenue, New York City, on Tuesday, December 8, at 1.30 p. m.

The dental profession is cordially invited. There will be a large and interesting programme to which the committee would like to add the names of every ethical member of the profession who will be kind enough to participate.

Exhibitors desiring space kindly communicate.

The regular meeting of the Society, to which has been invited the Second District Dental Society of New York and the Central Dental Association of Northern New Jersey, will be held in the evening at the Academy of Medicine at 8 o'clock.

The Clinic Committee.

W. D. TRACY.

RALPH B. REITZ.

S. L. GOLDSMITH, Chairman,

129 East Sixtieth street, New York City, N. Y.

Oklahoma Board of Dental Examiners.

There will be a meeting of the Oklahoma Board of Dental Examiners held at Oklahoma City Tuesday and Wednesday, November 10 and 11, 1903, for the purpose of examining candidates for license.

Guthrie, O. T.

A. C. HIXON, Sec'y.

Oklahoma Dental Association.

The thirteenth annual meeting of the Oklahoma Dental Association was held in Oklahoma City, May 12 and 13, 1903. The following officers were elected for the ensuing year: F. H. Colter, president; R. H. Pendleton, vice-president; Theo. P. Bringhurst, secretary and treasurer. The next meeting will be held at Shawnee, Oklahoma, in May, 1904.

Shawnee, Okla. T.

THEO. P. BRINGHURST, Sec'y.





Ohio State Board of Dental Examiners.

The Board of Dental Examiners of the State of Ohio will meet in Columbus, O., November 24, 25 and 26 at the Hartman Hotel for examination of candidates for certificates of registration.

Applications should be filed with the secretary by November 14.

For further particulars address:

H. C. BROWN, Sec'y, 185 E. State street.

Ohio State Dental Society.

The thirty-eighth annual meeting of the Ohio State Dental Society will be held at the Great Southern Hotel, Columbus, Ohio, December 1, 2 and 3, 1903. Visitors are cordially invited.

Portsmouth, Ohio.

S. D. RUGGLES, Sec'y.

Alameda County Dental Society.

On May 3, 1903, the name of the Oakland Dental Club was changed to that of the Alameda County Dental Society. The unprecedented success of the monthly meetings of the past two years has inspired the Executive Committee and officers to broaden the field of work. Of the forty members, many are residing in Alameda, Haywards and Berkeley, and it is the desire to include among the members all ethical dentists practicing in the county.

Besides the other interesting features of this year's work a series of clinics is to be given by members of the society. A limited number of able practitioners from San Francisco and elsewhere, not members of the society, will be asked to participate.

An evening devoted to eye, ear, nose and throat; an evening to discuss orthodontia, and one for anesthetics are among the good things promised.

J. C. GILBERTSON, Sec'y.

JOSEPH LORAN PEASE, Pres.